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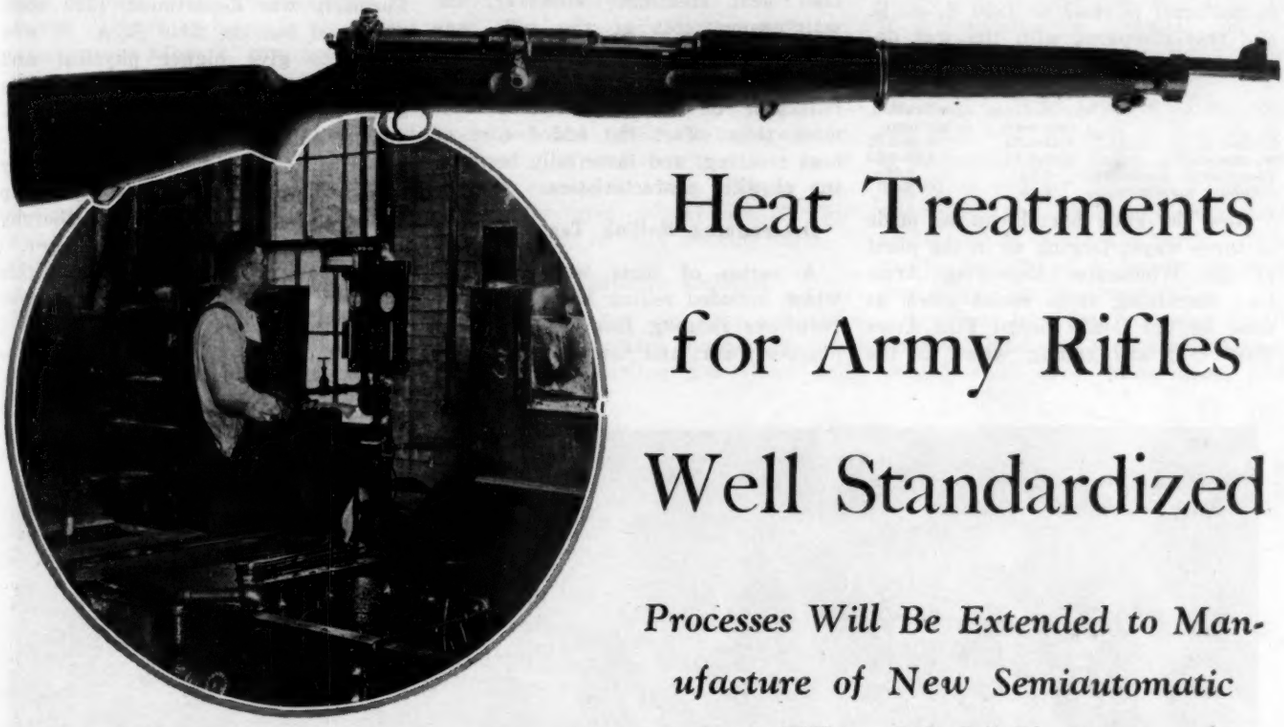


(Above)—0.30-caliber Thompson semiautomatic rifle with 21½-inch barrel. (Below)—Heat treating room in Springfield arsenal. The operator stands in front of a small furnace for treating reamers

Heat Treatments for Army Rifles Well Standardized

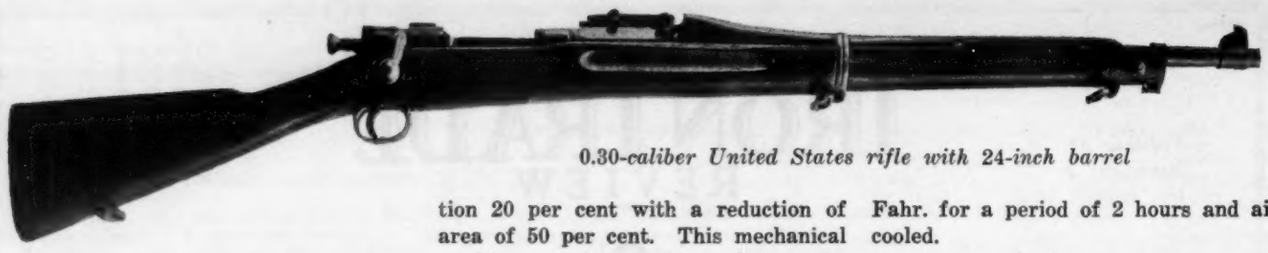
Processes Will Be Extended to Manufacture of New Semiautomatic Arm When Model Is Approved

By J. B. Nealey

IN PREPARING for the next war the United States, as well as other nations, is concentrating on the development of an infantry rifle that will combine the rapid fire of a machine gun with the lightness and ease of handling of the present type of small arm. A number of small light guns, semiautomatic rifles they are called, with various mechanisms have resulted. These are loaded with clips of less than 20 cartridges and are air cooled.

In outside appearance they resemble closely the ordinary infantry rifle, weigh little more, and are handled by one man with ease. The inventors of some of these are trying to lower the weight still further by introducing special alloy steels, which, when correctly heat treated, will provide the same high physical characteristics with smaller cross sectional areas. No doubt the war department will adopt a gun of this type sooner or later, but first its superiority to the old Springfield model 1903 rifle must be demonstrated in every way possible. One highly vital factor to consider in adoption of a new arm for war purposes is a simplicity of design and manufacture that will minimize confusion and misunderstandings when contracts for its production are let out to a large number of companies. This also holds true for the kinds of steel and the various processes by which they are heat treated. This policy of simplification of manufacture has been successfully carried out at the Springfield arsenal, Springfield, Mass., where fine military rifles have been manufactured for more than a century, and unquestionably will be extended to include any new arms that may be accepted. With this in view a description of the heat treating processes and the steels selected for the present standard rifle is timely.

While more than 90 different steel parts are used in this model only five different steels are used and the specifications for these, for all essential purposes, are the same as the S. A. E. 1020,



0.30-caliber United States rifle with 24-inch barrel

1120, 1095, 1350 and 2340 with slight variations. For instance, the rifle barrel steel is close to 1350 S. A. E. and this compares with the war department specification as follows:

	S. A. E. specification, per cent	War Dept. specification, per cent
Carbon	0.45-0.55	0.45-0.55
Manganese	0.90-1.20	1.00-1.30
Phosphorus, maximum	0.04	0.05
Sulphur, maximum	0.05	0.05

Now the rifle barrel can be made in three ways; forging as in the plant of the Winchester Repeating Arms Co.; machining from round stock as done by the Colt's Patent Fire Arms Mfg. Co.; and rolling which is the practice at the shops of the Springfield arsenal. This practice consists of shearing a piece 13 inches long and 1.4 inches in diameter from a steel billet, heating it to 1500 degrees Fahr. and rolling it by passing it through 12 grooves, all on the same roll.

The piece is reduced and tapered slightly in each groove and when it passes through the last is roughly of barrel shape, 26-27 inches long and ready for heat treating and machining. This rolling operation is accomplished on a single heat. Formerly the practice was to roll from a temperature of 1200 degrees Fahr. and cool in lime without any further heat treatment, but the present practice, recently introduced, produces much higher physical characteristics.

With the old practice the following physical characteristics were obtained: Tensile strength, 110,000 pounds; yield point, 75,000 pounds; and elongation 20 per cent with a reduction of area of 50 per cent. This mechanical working at temperatures below the critical partially hardened the steel as does heat treating. However, the maintenance cost of the rolls was high and later it was found that working at higher temperatures effected a reduction in roll maintenance that more than offset the added cost of heat treating, and materially bettered the physical characteristics.

Determining Rolling Temperature

A series of tests was conducted which included rolling barrels at temperatures ranging from 1200 to 1500 degrees Fahr. and heat treating done afterward with the following results:

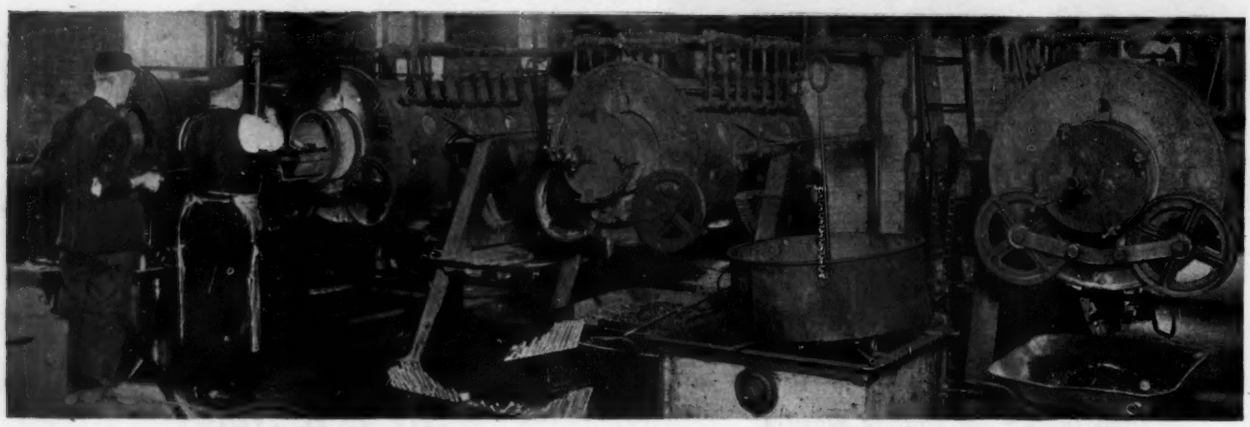
Temp., degrees Fahr.	Yield point, lb. per sq. in.	Tensile strength, lb. per sq. in.	Elongation, per cent	Reduction of area, per cent
1200	79,533	112,466	21.8	53.2
1250	77,717	114,233	21.8	53.2
1300	74,966	108,333	24.2	55.5
1350	74,276	104,426	25.5	57.1
1400	74,950	115,485	23.6	53.6
1500	96,773	126,930	20.0	52.9

Rolling at the 1500 degrees Fahr. temperature was adopted and as soon as the barrel is out of the rolls it is straightened in a drop hammer, the temperature then being about 1200-1250 degrees Fahr. It is then normalized by heating to 1700 degrees Fahr. and allowing it to soak in this heat for about 2 hours after which it is air cooled. This temperature gives the steel better machinability than did the 1600-1650 degrees Fahr. formerly used. It is then soaked in a heat of 1550 degrees Fahr. for an hour and quenched in oil for hardness after which it is drawn at 1100-1200 degrees Fahr. for a period of 2 hours and air cooled.

The bolt, receiver, and other parts, are made from 2340 S. A. E. steel. Formerly war department 1325 steel was used but the 2340 S. A. E. was found to give higher physical and better shattering properties. With this steel the flange on the bolt, for instance, will not blow off and the receiver, instead of shattering into many flying pieces, will simply open up under too great pressure, thereby minimizing the danger to the user.

The heat treating practice for this steel is to anneal at 1550 degrees Fahr. by putting the parts into a furnace, bringing them up to temperature, turning off the gas and allowing them to cool in the furnace. For hardening, a salt bath is used, the parts being heated to 1425-1450 degrees Fahr. for 5 minutes and quenched in oil. They are then drawn in a salt tempering bath at 700 degrees Fahr. for half an hour and air cooled which gives them a Rockwell hardness of 40-50 on the C scale.

Sight parts, cocking pieces, trigger, sear, screws, and the like, are made from carburizing steel S. A. E. 1020 and 1120. The sear is the small part of a gun or revolver that releases the firing mechanism when the trigger is pulled. A "hair trigger" is produced by filing off the top of this piece and there are always certain users who will do this. However, it is bad practice for only a small amount of filing is necessary to penetrate the case and leave the soft steel to wear away quickly. In this condition there is



Group of gas-fired rotary carburizing machines in heat treating department of Springfield arsenal

nothing to hold back the cocking piece or firing pin. Many rifles are returned annually for sear replacement.

In carburizing these parts, they are first packed in pots with charred bone or put into rotary carburizing machines and heated to about 1450 to 1500 degrees Fahr. for varying periods according to the depth of case desired which is 0.008-inch in most cases. The cocking piece is held at a higher heat for four hours, it having first required 2 hours to bring it up to this temperature after it was put in the furnace. This produces a case 0.012 inch deep. It is then dumped into a sieve; here the bone is allowed to fall through and the work gradually dribbles into an oil quench by gravity. Besides producing the case, this treatment tends to harden the core.

The cocking piece then is repacked in bone and reheated to 1300 degrees Fahr. and held at this temperature for half an hour after which it is again quenched in oil. This second heating refines the grain structure of the case and core and reduces the hardness and toughens the core. This last part of the process is necessary, for the firing pin rod is assembled to the cocking piece which would crack were it not toughened. The sear is given the first half of this treatment but the latter part is omitted.

The springs, including the flat spring actuating the follower, are of the S. A. E. 1095 steel. These are put into furnaces at 1450 degrees Fahr. and as they are small and only 25 on a tray are charged at a time, they are heated in 10 minutes time and withdrawn and quenched in oil. They are drawn at 770 degrees Fahr.

The heat treating department of the Springfield arsenal is divided into two rooms and here are located every kind and variety of heat treating unit. Gas is the standardized fuel and is mixed with air for combustion in a mixing machine. In one row are four brick furnaces each about 6 feet wide and 4½ feet square, heated with two gas burners in front and two in the rear, firing under the hearth in semi-muffle type. The doors are counterweighted and lifted by pulleys. An indicating pyrometer with a four-point switch serves all four. These furnaces are used interchangeably for several kinds of heat treating work.

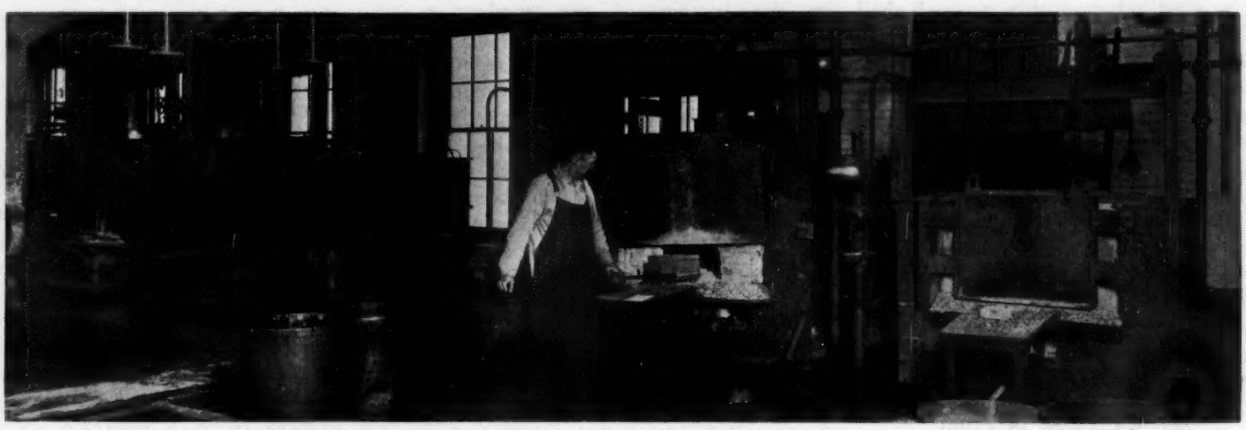
Pot Furnaces Included

In another row are two pot furnaces, each furnace containing two 10-inch pots holding salt, lead and niter baths for tempering, hardening and bluing. Each furnace is built of brick encased in sheet steel and four gas burners fire onto each pot, two from the front and two from the rear. Temperatures are checked by an indicating pyrometer with a four-point switch. There is also a small 6-inch cyanide or salt pot set in brick and heated with two gas burners.

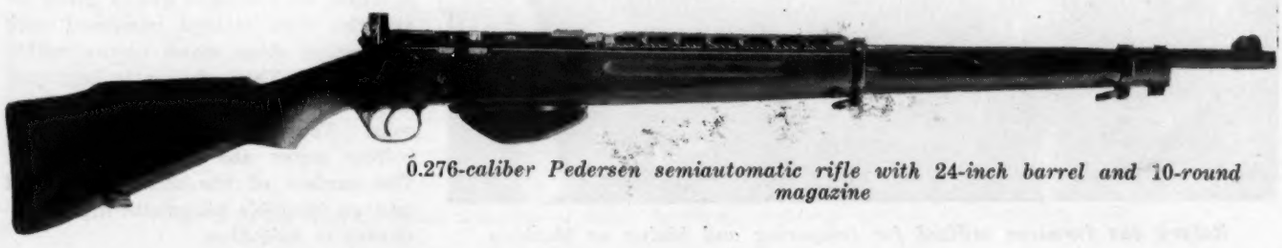
Facing these is a row of five furnaces and the oil, water and brine quench tanks form a row in between. Of the furnaces, three are about 3 feet in all dimensions and are of the semi-muffle type, that is, the burners fire into a combustion chamber below a tile hearth. Two of these have a single burner and the other three have four. They are used for hardening tools of high-speed steel. An indicating pyrometer with a five-point switch is part of this equipment, as well as a recording pyrometer for more particular work.

The heat treatment of long reamers is accomplished in a small circular furnace made at the arsenal. This is about 4 feet high and 18 inches in diameter, built of brick, steel encased, and with a 6-inch hole in the center. It is heated with three gas burners spaced at regular intervals vertically and firing tangentially against a steel muffle, which holds the work. This muffle consists of a length of steel pipe capped on the lower end.

A unique unit for hardening small parts of high-speed steel consists of a circular steel shell, brick lined, and divided into three decks or chambers vertically. This unit, which sets on legs, is 2½ feet high and 2 feet in diameter and is heated with a single gas burner firing under the hearth. Between each deck is a refractory tile with the correct number and size of holes to permit the passage upward of just the amount of required heat. Thus the temperature of the first chamber is 2200-2400 degrees Fahr., the second 1600-1700 degrees Fahr., and the top one 900-1000 degrees Fahr. There are also two oil



Another group of heat treating furnaces used in the manufacture of United States service rifles



0.276-caliber Pedersen semiautomatic rifle with 24-inch barrel and 10-round magazine

Parkerizing installation for rifle barrels and rifle parts

tempering baths heated with gas pipe burners.

Carburizing is accomplished in the other room at one end of which is located a row of four rotary-type carburizing machines. These consist of a steel retort within a steel shell 5 feet long and 5 feet in diameter through which fire 16 gas burners. The retort is some 8 inches in diameter and extends from both ends of the shell about a foot. This retort rests on four wheels, two in front and two in the rear and is rotated by means of a chain and sprocket which engages another sprocket wheel fitted over the rear end of the retort. One motor drives all four machines, and one indicating pyrometer with a four-point switch is used to regulate the temperatures.

Quench Tanks in Front

In front are two steel quench tanks with an overhead monorail and hoist with which to handle the sieves and baskets. The steel parts and bone are discharged into a long sieve, the bone dropping through while the work rolls by gravity into the quench where it drops into baskets for further handling. At the other end of the room are eight more machines, similar in type, except that they are heated with a long gas pipe burner, located in the bottom of the combustion chamber, the flames impinging on the retort. These are driven from a single motor and are used for tempering and bluing or blackening. They are served with two oil quenches and two indicating pyrometers with four-point switches.

The process for oil blackening is as follows. The work is charged into the retort with charred bone, heated to 900 degrees Fahr. and cooled slowly to 650 degrees Fahr. The bone is then removed, saturated in mineral cylinder oil and returned to the retort and the whole charge held at 650 degrees Fahr. for 3 hours. The work is then removed and quenched in oil which gives it a black finish. This black finish has twice the life of a blue finish. Another method used here is to heat the bone to 1300-1500 degrees Fahr. and then quench in oil.

Rotary gas furnaces utilized for tempering and bluing or blacking

A large group of various type furnaces occupies the center of the room and among these are three oven-type furnaces, each about 2 feet in all three dimensions and underfired with four gas burners. These are served with two oil quenches. Two lead pots for hardening are enclosed in a single brick furnace with eight gas burners while four pots, two for cyanide and two for salt baths, are enclosed in brick individually. Four quenches, two water and two oil, are nearby. Another two-pot furnace for salt baths is included in this group.

Niter bluing of small parts is accomplished in a two-pot furnace the baths being carried at 700-900 degrees Fahr. The baths are a mixture of 9 parts sodium nitrate to one part manganese dioxide. The work is immersed for about 5 minutes, quenched in cold water and any adhering niter is then removed in boiling water. There are many variations from the above practice. Indicating pyrometers serve every unit.

Oil Cooled by Circulation

The oil in the oil quenches is cooled by circulating it with pumps through a reservoir, that is, the oil is pumped from the reservoir into the individual quenching tanks and returns to the reservoir by gravity. The reservoir is cooled by pipe coils located on the bottom and water cooled by an aerating system which circulates through the coils. The quenches hold about 2000 gallons of oil while the reservoir contains 4000 gallons more.

Rifle barrels and other parts are Parkerized and the installation for this process is in a separate room. The parts are first cleaned to remove dirt, oil and scale, a soda wash and sulphuric acid pickle followed by a rinse being used. The work is then placed on a circular cast iron grating or table, the barrel excepted, which revolves and carries the parts through a booth where sand under 50 pounds pressure is forced on them through a series of nozzles. The barrels are sand rubbed.

The parts including barrels are then placed in steel racks, handled by an overhead monorail system, and the racks, two to a tank, are placed in the Parkerizing solution. The barrels are stoppered at both ends. When first put in, hydrogen gas is given off and the work is kept immersed until this action stops which occurs within 1½ hours. This solution is kept just below the boiling point with steam coils. The work then is washed in boiling water and dried in cabinets. The surface of the steel is charged into an insoluble phosphate highly resistant to oxidation.

Straightens and Surfaces Billets on Specially Designed Machines

Appreciable Reductions in Both Time and Labor Factors Are Effected by Use of New Billet Handling Units

By Leon Cammen

STEELMAKING presents two alternatives, working with expensive tools and inexpensive labor, or inexpensive tools and expensive labor. Up to this time chipping billets has been done with inexpensive tools and with crude facilities for handling the billets. Naturally, labor costs were high, and working conditions none too good. Moreover, considerable skill is necessary to make a good chipper. From two to three months are required to bring a man's output of chipped billets to full capacity. The result is that when a mill books a large tonnage of new business and suddenly has to expand its chipper force, the new men operate at low efficiencies.

The machinery described in this article was designed to handle the problem of chipping in a comprehensive manner, the basic idea being to use machinery of a high grade in order to reduce the number of men and make their work easier.

The billet chipping machine consists of two units, a surfacer and a straightener. The billet surfacer is essentially a planer. with a peculiar type of tool, however. It has been known for a long time that the load on a planer tool rapidly increases with the volume of metal removed. It is easy to cut a groove 1/16-inch deep and ¼-inch wide; a good deal more power is required to cut the groove ½-inch wide, and it is impractical to cut it 10 inches wide. It will require, however, only twice as much power to cut two grooves ¼-inch wide, side by side, as it takes to cut one such groove, and it

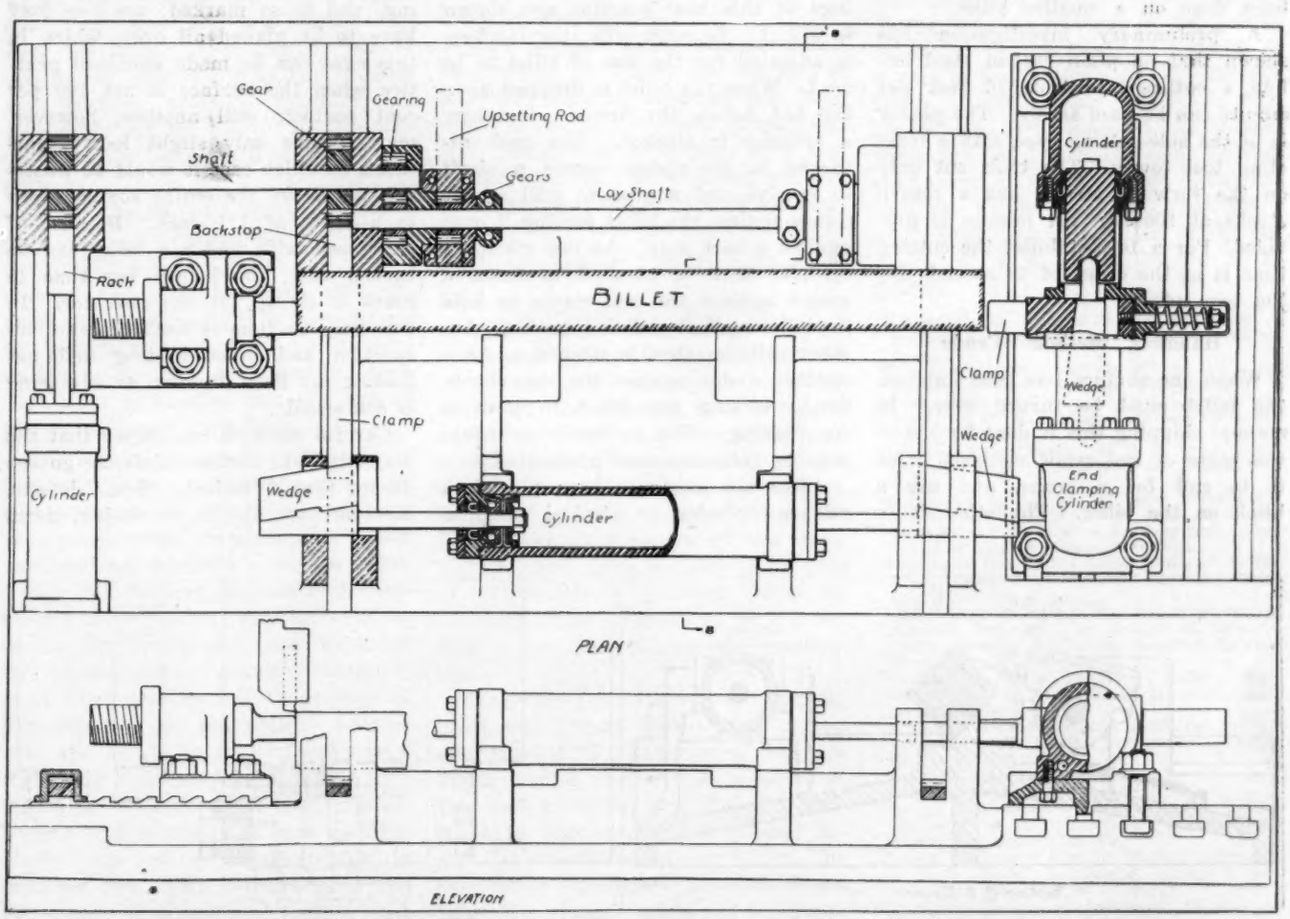


Fig. 1—Plan and elevation drawing of billet surfacer, showing method of clamping billet

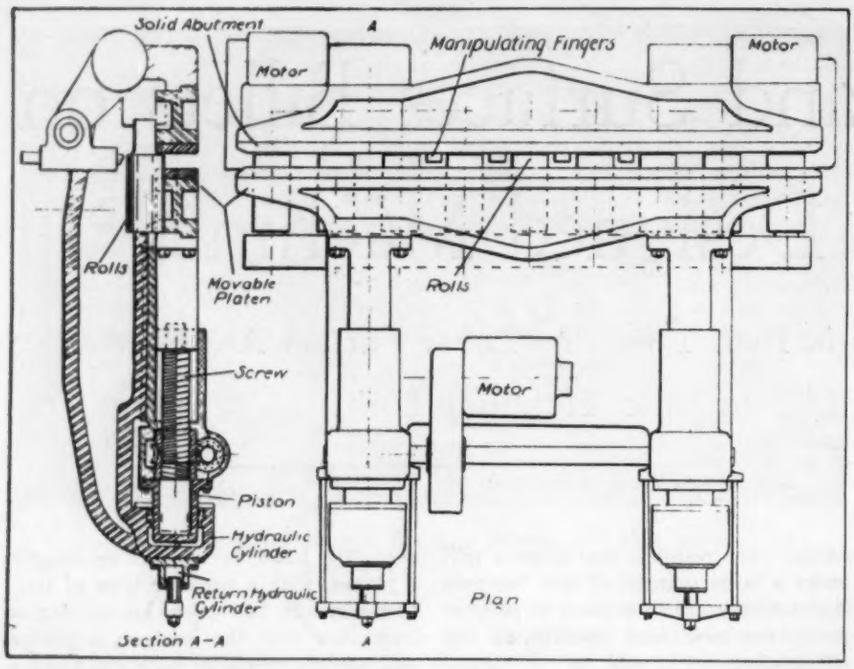


Fig. 2—Plan and sectional views of mechanical billet straightener

will require 20 times the power to cut 20 such grooves. If, therefore, the cutters are spaced as shown at the right in Fig. 3 the first cut will remove half the surface of a 10-inch billet, and the second cut will take care of the rest. This actually has been done on a smaller billet.

A preliminary investigation has shown that on plain carbon steel billets a cutting speed of 40 feet per minute can be used safely. The planer is of the side-cutting type with a traveling tool tower. The tools cut only on the forward stroke, but a return stroke at 100 feet per minute is provided. For a 10-foot billet the cutting time is of the order of 40 seconds for the two cuts.

Handling Methods Crude

When one surface has been finished, the billet must be turned over. In manual chipping this is done by one of two more or less crude methods. One is to call for a crane, and use a hitch on the billet. The other is to turn the billet over by some kind of a level device and then move it back under the tool by brute force, sometimes by sledge hammer blows.

In the machine described here the billet is handled entirely by special machinery. Plan and elevation drawings of this new machine are shown in Fig. 1. To start with, the machine is adjusted for the size of billet to be used. When the billet is dropped upon the bed before the firs cut is taken, a cylinder is stroked. The rack attached to its piston causes a shaft to revolve and a gear to pull a side clamp against the billet forcing it over against a back stop. An end clamping cylinder then is stroked to force a wedge against the end clamp to hold the billet against endwise strains. Another cylinder then is stroked to force another wedge against the side clamp, firmly locking the billet in position for planing. The hydraulic cylinders may be interconnected if desired.

After one side has been planed, a release cylinder is stroked simultaneously with the second clamping cylinder which unlocks the clamping wedges. The cylinder is now stroked in the opposite direction and turns the shaft, causing the side clamps to move out of the way and at the same time revolving through gearing the lay shaft to which gears are attached. These force out upsetting rods, shown in action at the left of Fig. 3, and turn the billet over 90 degrees. The billet is pushed over into its original position, and is ready for the next cut. Stroking of the cylinders is so laid out that the entire turning operation will take about 10 seconds. This permits an interesting arrangement of tools.

Procedure Is Described

Two surfacers are set side by side, with the operator seats and hence the cutting towers toward the aisles between the tools. While the operator takes the cut on the right-hand tool, the helper, preferably a former chipper, unloads the finished billet off the left-hand tool and places on a a new billet. Assuming that the cycle of operation per billet for all four sides is an average of 5 minutes, this leaves plenty of time for the helper to turn the billet over on all four sides, and inspect each face. One face of the billet may be so good as to require no working, and is so marked; another may have to be planed all over, which in this case can be made standard practice when the surface is not 100 per cent perfect; still another, however, may require only slight local treatment, in which case it would be wasteful to remove the entire surface even to a depth of 1/16-inch. Because of the speed with which a billet can be turned over, the helper has time to mark it all up for the operator. In this way no time is lost for billet inspection and billet loading and unloading, at least insofar as surfacing is concerned.

Careful analysis has shown that the majority of surface defects go no deeper than 1/16-inch. Some defects, however, are apt to be deeper, down

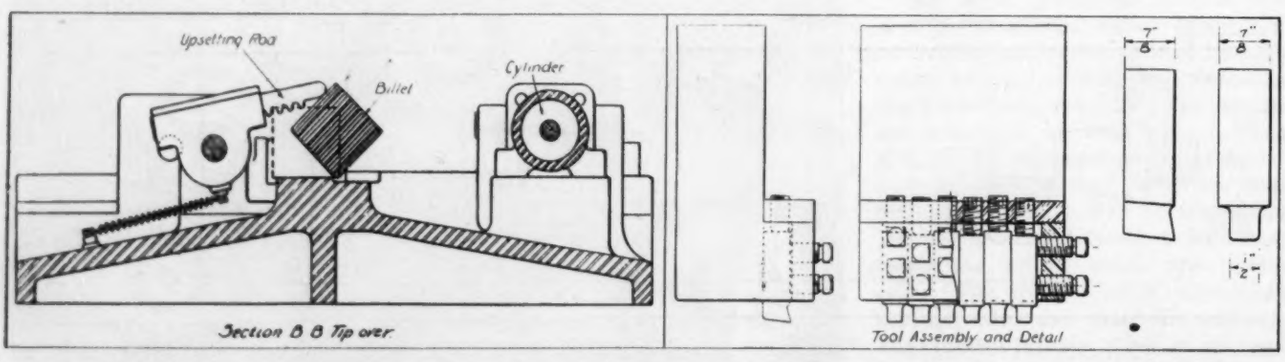


Fig. 3 (Left)—How the billet is turned over after planing one face. (Right)—Arrangement of tools in tool tower

to ¾-inch. As it would be wasteful to plane off the entire surface to that depth for the sake of a local defect, a special milling tool has been provided. The feed of this milling cutter is controlled by a handle. While a cutting speed of 40 feet per minute is reasonable for a planer tool, a milling tool should operate at a speed of the order of 9 to perhaps 18 inches per minute. A speed change box therefore is provided and the speed change from planer to milling tool speed and back is effected by shifting another handle. When the defects are deeper than ¾-inch, the proper procedure is to scrap the billet entirely.

All of the above methods are predicated upon the billet being straight, as it is, of course, impossible to plane rapidly a crooked billet. Many billets either come crooked from the mill, or are bent out of shape in handling to and in the shears. In the present design it was decided that a straightener should be installed right after the shear. This is shown in Fig. 2.

Tool Has Movable Platen

This tool consists of a solid abutment and movable platen. The billet is not shown in the diagram but lies between these two. The movable platen is started by a screw operated by an electric motor through a proper gear which gives it a fast transit until near the billet. A hydraulic cylinder and piston come into play and produce the working pressure necessary to straighten out the billet. In this way quick action is secured and yet the element of blow on the abutment is avoided. The movable platen is stroked back by a smaller hydraulic cylinder and reversal of the motor.

After the billet has been straightened out on one side, it is turned over by manipulating fingers, as is done today in blooming mill manipulators. The billet is handled into and out of the straightener by rollers.

The cost of operation of this device is low, as it can be handled by the same man who now handles the kickoff from the shears, while the amount of power used will not exceed 2 cents per billet.

A comparison of the costs of chipping and surfacing will have to be necessarily rough and must be based on assumptions. Assume, however, good billet practice and an average of 5 man-hours per ton today. Assume that the billets being surfaced are 8 inches by 8 inches by 10 feet, and 6 inches by 6 inches by 8 feet. While a cycle of 5 minutes has been specified above, one of 6 minutes will be assumed here, with two machines and two men. It is assumed further that the mere placing of the billets from the straightener to the bed of the surfacer is equivalent to one-half man-hour time.

This means that with 8 by 8-inch billets the output will be 21,760 pounds per hour, and with 6 by 6-inch billets, 9910 pounds. The helper, being a former chipper, would receive the same rate of wages as the chippers; the operator, a machine shop man, would receive a little more, so that the wages of the two would be equivalent to those of about 2.25 chippers, which means that in the first case the labor consumption of the tool will be 0.2 man-hour per ton, and in the second case, 0.56 man-hour per ton.

Comparisons Are Striking

The total labor consumption, under the above assumptions, made deliberately unfavorable to the new method, is, therefore, for 8 by 8-inch billets, 0.7 man-hour per ton, including all handling; and for 6 by 6-inch billets, 1.06 man-hours, as compared with 5 man-hours per ton assumed for the present methods.

A striking difference appears when the number of men on the payroll is counted. Assuming 24 hours a day operation, and a daily output of chippable billets of 750 tons, we have, at 30 tons per hour and 5-man-hours per ton, a force of 150 men per turn, or a total of 450 men.

When it comes to machine surfacing, an average of 7 tons per set of two machines may be assumed per hour, which means that five sets of machines with only ten men per turn can handle the job. This means a force of 30 men ,as compared with 450 men.

Executives Will Direct Standards Group

Recognition by industrial executives of savings to be made through standardization led recently to a reorganization of the American Standards association to place control of policies into the hands of industrial leaders. In keeping with this program the first board of directors of the association, comprising executives of nine of the country's greatest industries, were scheduled to meet in New York, July 9 for the purpose of organization.

According to James A. Farrell, president, United States Steel Corp., and since 1925 chairman of the advisory committee of the association, the reorganization constitutes a far-reaching development in national industrial standardization activities. The association comprises representatives from 40 technical, trade and industrial organizations and government departments. Direction of activities thus far has been in the hands of scientists and engineers.

The new board of directors includes the following: Matthew S. Sloan, president, New York Edison and affiliated electric companies; L. A. Downs, president, Illinois Central railroad; Bancroft Gherardi, vice president, American Telephone & Telegraph Co.; F. E. Moskovics, president, Improved Products Corp; Quincy Bent, vice president, Bethlehem Steel Co.; Howard Coonley, president, Walworth Co.; R. J. Sullivan, vice president, Travelers Insurance Co.; C. L. Collins, president, Reliance Electric & Engineering Co.; and George K. Burgess, director, United States bureau of standards.

The first meeting of the board is expected to be followed by an intensive campaign to finance national standardization activities on a larger scale than heretofore. An important question to come before the body is that of American participation in international standardization activities.

Announces Papers for Welding Meeting

The American Welding society has announced the papers to be presented during the fall meeting of the society in Cleveland the week of Sept. 9 as a part of the National Metal congress. Over 10,000 square feet of floor space has been reserved for manufacturers of welding and cutting equipment at the National Metal exposition to be held at the public auditorium in conjunction with the congress. The list of papers is as follows:

"Nondestructive Tests of Welds," by Elmer A. Sperry, Sperry Development Co., Brooklyn, N. Y.

"X-Ray Investigation on Welds," by Dr. H. H. Lester, Watertown Arsenal, Watertown, N. Y.

"Oxyacetylene Welding of Pipe Lines in the Field," by W. R. Ost, Air Reduction Sales Co., New York.

"Welding of Pipe Lines," by H. C. Price, manager, Welding Engineering Co., Bartlesville, Okla.

"A Metallographic Study of Some Metallic Arc Welds," by H. M. Boylston, head of the department of Mining and Metallurgy, Case School of Applied Science, Cleveland.

"Welding of Copper and Copper Alloys," by Mr. Hook, research laboratory, American Brass Co., Waterbury, Conn.

"Welded High-Strength Aluminum Alloys for the Aircraft Industry," by Joseph R. Dawson, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y.

"Foreign Practice in Welding of Boilers, Tubes and Drums," by G. A. Orrik, consulting engineer, New York.

"Stress-Strain Characteristics of Welded Joints," by Prof. J. H. Smith, Universtity of Pittsburgh, Pittsburgh.

"Study of Nitroid Needles," by P. Alexander, General Electric Co., Schenectady, N. Y.

"Cutting and Welding Steel Parts to Replace Castings," by W. J. Buchanan, Bessemer Gas Engine Co., Grove City, Pa.

"Testing Equipment Used in Welding Industry," by V. G. Tatnall, Southwark Foundry & Machine Co., Philadelphia.

"Machinery Design as Influenced by Electric Welding," by H. G. Boist, General Electric Co., Schenectady, N. Y.

Metallography Simplified for Practical Use In Shop

By

E. Preuss
G. Berndt
M. v. Schwarz

Translated from the German by Richard Rimbach

Chap. XIII—Inclusions, Slags and Welding Seams (Concluded)

EXAMINATION of an etched section by the microscope also affords a suitable method for determining the quality of welds and welding methods. Figs. 219 to 221 represent different points of a welded street car rail which was made with the thermite process. At the joint a mold of about 30 centimeters in length was cast around the two rail ends surrounding the web and foot of the two rail ends like a plate. It consisted of iron of comparatively low carbon content while the rail was of steel of considerably higher carbon content.

The object was to determine whether or not the rail ends had been welded together within the joint, and to see if the welding of the surrounding casting with the foot was complete, and if it was purely metallic. Fig. 219 shows in line *g-g* a piece of the joint; to the left and right of *g-g* are the two rail ends. It is evident that the structure consists almost exclusively of large pearlite grains, according to the high-carbon contents of the rails, between which the ferrite existing only in small amounts lies in shape of a white net of large mesh. It also can be seen that the transition between the two rails is of a purely metallic nature.

In spite of the fact that the heat produced by the thermit process was not sufficient to bring about a new structure at the transition zone, the joint had been completely obliterated. In line *g-g* the originally existing crystal structure of the two rail ends

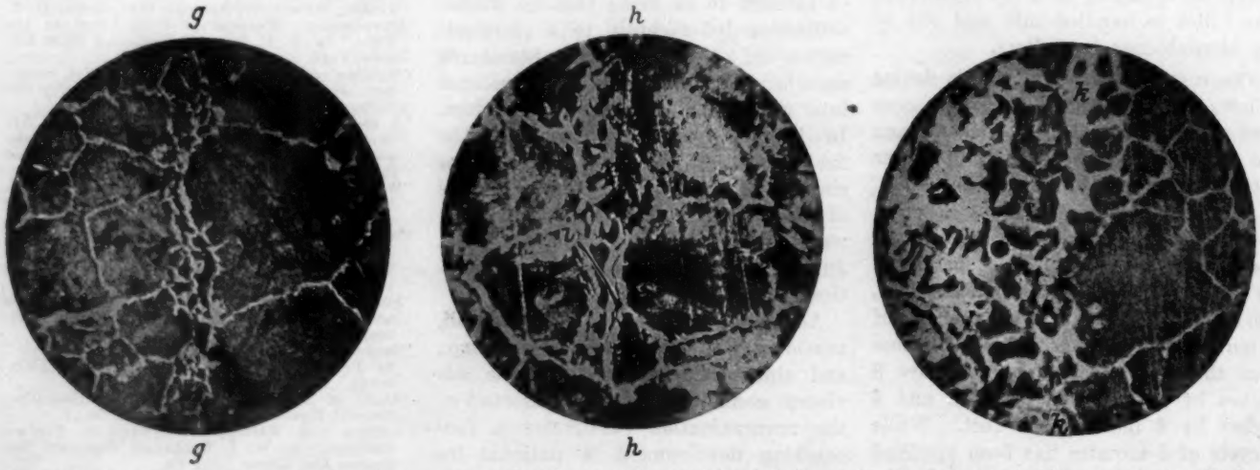


Fig. 219 (Left)—Section of welded seam of a street car rail welded with thermit. No slag inclusions present. Etched microscopically. X 60. Fig. 220 (Center)—Section of welded seam of a street car rail welded with thermit. Slag inclusions are present. Etched microscopically. X 60. Fig. 221 (Right)—Longitudinal section of welded seam of a street car rail welded with thermit between the cast material and the rail. No slag inclusions present. Etched microscopically. X 60

comes bluntly together, and the metallic transition is due to comparatively small new crystals which, by their shape and location, still show the original area of separation of the two rails.

Fig. 220 shows another piece of the same joint in which the original separating line is marked by *h-h*. Here, contrary to Fig. 219, a long thread of slag can be seen imbedded. At this place, therefore, a purely metallic joint between the rail ends does not exist and the weld is not perfect.

Fig. 221 represents a transition point from one rail end to the surrounding casting. To the right of the transition lines *k-k*, the steel rail high in carbon and consisting almost entirely of large pearlite grains (compare Fig. 219), can be recognized. To the left of it the material of the surrounding casting is considerably lower in carbon, and as disclosed by the microstructure, contains much more ferrite than the rail. The transition between casting and rail is purely metallic and free of slag. However, the fusion between the two was imperfect since in a perfect weld the structure of the casting would have gradually changed into that of the rail, instead of appearing abrupt as Fig. 221 indicates.

Examination of the effect of the welding agents was of particular importance in the welding of small high-speed steel plates onto ordinary steel, which in recent years often has been done for economic reasons. Thus as shown in the right portion of Fig. 224, high-speed steel was barely attacked by the etching agent.

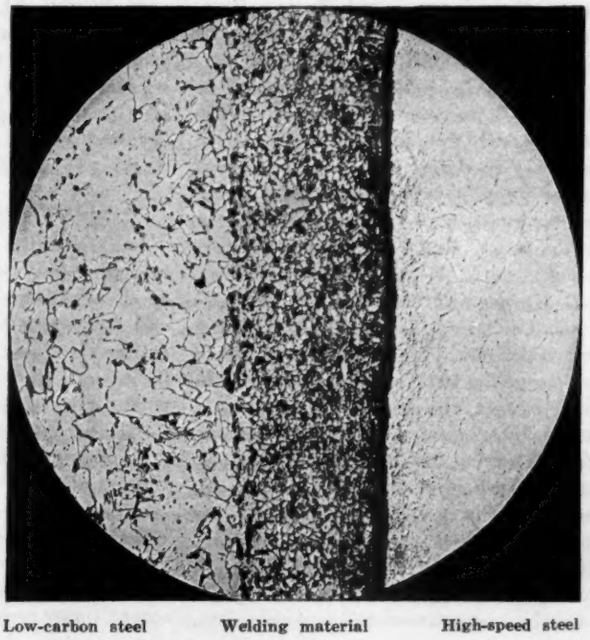
Fig. 222 (Left) and Fig. 223 (Right) show longitudinal sections through electric butt welds of high-speed steel drills to carbon steel shanks. Fig. 222 is a good weld to approximately eutectoid steel. X 100. Fig. 223 is a poor weld to soft steel with only about 0.20 per cent carbon. X 100

At the left of Fig. 224 is shown the carbon steel, whose carbon content, as indicated by the numerous ferrite polygons only slightly surrounded by pearlite, amounted to about 0.1 per cent, while between the two lies the structure of the welding agent, which has a greater amount of fine grained pearlite and, therefore, of carbon.

The dark stripe separating welding agent and high-speed steel, is not an inclusion of slag, but a shadow which is due to the different actions of the polishing and etching agent on the two materials. The welding agent immediately sets against both so that actual melting between the two did not take place.

Figs. 222 and 223 show two high-speed steel twist drills electrically butt welded onto ordinary carbon steel. The high-speed steel is represented in the upper portions of the figures and carbon steel in the lower portions. Fig. 222 represents a successful weld of a eutectoid steel, while the weld to carbon steel of 0.2 per cent did not succeed so well as readily can be seen from Fig. 223[12]. According to R. Walter, "hardmetal" recently was melted directly with the oxyhydrogen burner. This is the best and simplest solution.

[12]Compare M. von Schwarz: Zeitschrift fuer Metallkunde, Vol. 7, No. 5, and N. Czako: Zeitschr. d. Ver. Ing. Vol. 63, Page 166, 1919, as also J. Sauer: Uhlands Prakt. Maschinenkonstrukteur, 1919, Page 273.



Low-carbon steel Welding material High-speed steel

Fig. 224—Longitudinal section of high-speed steel welded to low-carbon steel. Etched microscopically. X 50 (F. Wuest)

To Electrify Strip Mill

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been awarded a contract by the West Leechburg Steel Co., Leechburg, Pa., for a complete electric drive for a new 12-inch hot strip mill to be installed to replace an old Belgium type mill. The new installation comprises a 1600-horsepower alternating-current motor, eight direct-current motors totalling 4300 horsepower, and 3000 kilowatts in generating equipment.

Included in the contract are the necessary speed reducing units which will be made at the Nuttall works of Westinghouse company. The contract also includes a 2200-horsepower, alternating-current motor required for a rearrangement of the drivers of the present 16-inch mill and a 1000-kilowatt motor generator for supplying direct current to auxiliary mill motors.

Pennsylvania railroad is reported planning to use roller bearings on freight cars.

Automobile Body Maker Buys Steel on Basis of Performance

Philadelphia Manufacturer Prefers Policy of Co-operation with Supplier of Sheets and Strips Rather Than Insistence Upon Rigid Specifications

By Dr. George L. Kelley

Metallurgist, Edward G. Budd Mfg. Co.

THE plant of the Edward G. Budd Mfg. Co., at Philadelphia, is engaged in the manufacture of automobile bodies and other difficult stampings on a production basis. The methods at this plant do not resemble those followed at small or customs production plants.

In automobile body work, the company aims to produce an all-steel body in which the skin of the body functions as a structural member as well as a covering material. For this purpose the company uses sheets and strip steel in all the varieties in which they find use in the automobile business, and it has occasion to pass on the usefulness of these different types of steel for its purposes.

The nature of the company's stampings is such as to require materials representing the utmost attainable widths in sheet steel and the greatest possible ductility in both sheets and strip steel. The company's laboratory is concerned with the task of assisting to these ends.

Hand Work Avoided

Were the company concerned with stampings in smaller volume, fewer and less expensive dies would be required, and the shortcomings of the stamping operations could be overcome by hand work. Being engaged in producing automobile bodies on a production scale, however, the cost must be kept down by avoiding hand work, which means extensive die development that will turn out a finished job of satisfactory quality. In a good many of the company's operations, therefore, the steel must be capable of being worked satisfactorily into final shape, this being accomplished in difficult and complicated dies.

Looking at the question of supply in a general way, the Budd company finds that the strip mills now are turning out material of very uniform gage and in greater widths than heretofore obtainable. The gages suitable for automobile body use are available from many sources up to 24 inches wide and, in exceptional cases, wider strips can be had. Widths as great as 40 inches are projected. For this purpose the strip mills are using high-speed continuous mills which in some instances produce strip at a speed of 900 feet per minute. The developments in this field promise a large output of high-grade material at low cost.

With respect to sheets, the sheet steel manufacturers lately have been successful in developing a product of extraordinary width. Only a few years ago sheets were not available in greater than 52-inch widths. Within the past three years this width has been increased by approximately 20 inches. Sheets of these widths have sorely taxed the capacity of the mills in the development of a product combining the necessary surface and drawing qualities. Such sheets now are produced in both box annealed and normalized grades. The production of such large material in normalized sheets is a noteworthy accomplishment from the standpoint of a company engaged in production stamping. Along with the application of process annealing to these very wide sheets has come a better control of their properties, so that normalized wide sheets now are available which have all the toughness of the former product and which still have good, easy-working qualities.

No Fixed Specifications Imposed

It is not the practice of the Budd company to set either the physical or chemical specifications of the sheets and strips which it purchases. It aims rather to purchase material which, in its own and suppliers' opinion, will work satisfactorily for producing a particular stamping. Where the stamping is unusually difficult the company takes its suppliers into its confidence and gives them the benefit of all test records and other data concerned.

Sheet steel, even with all of the recent improvements, still is not a per-

Method of Buying Sheets and Strips Described

IN CONNECTION with its specifications for sheet steel and strip steel, the Edward G. Budd Mfg. Co., Philadelphia, one of the country's largest makers of all-steel automobile bodies and difficult steel stampings, follows an unusual policy. This policy is one of constructive co-operation between the company and its suppliers. In the accompanying article prepared at the request of IRON TRADE REVIEW, *Dr. George L. Kelley, metallurgist in charge of research and plant process development for the Budd company, describes in detail how this large consumer buys, tests and uses steel sheets and strips. Doctor Kelley, a graduate of Harvard university, formerly was in charge of the laboratory and engineer of tests for the Midvale Steel Co. and the Midvale Steel & Ordnance Co. He joined the Budd company in* 1921. *He is assisted in his present work by J. Winlock, formerly associated with the late Dr. Henry Marion Howe, professor emeritus of metallurgy, Columbia university, and Dr. Albert Sauveur, professor of metallurgy and metallography, Harvard university.*

fectly uniform product. Testing by tensile, cup or hardness tests, therefore, may be very misleading, unless the testing is conducted on a scale so extensive as to be commercially prohibitive. A single test will not represent a single sheet, nor will a single sheet represent a carload of material. To establish the probable working quality of flat stock of this kind, it would be necessary to take many samples and make many tests.

Accordingly, the Budd company does not test the material as received.

It does not follow, however, that the company is not interested in connecting, so far as may be, the physical properties of the steel with its performance on the die during the making of the stamping. In order to accomplish this, the company draws its samples from the material directly in front of the press as it is going through the operation. The representative of the laboratory who is taking the samples, watches the operation while several stampings are made, during which he notes whether the material is performing in a satisfactory manner. He will then draw a sample and continue to watch the operation so that he may form an opinion as to whether the steel withdrawn for test purposes is representative of the run of material. Depending on the importance of the case, he may, at intervals during several minutes, draw such samples. It will be evident that if the material is yielding 100 per cent of either good or bad stampings, the sampling will be easy. It becomes more difficult as the performance is more irregular. When only a small percentage of failures occurs, say 5 per cent, a larger number of samples must be drawn than when the percentage of failures is greater. For instance, when 50 per cent of the pieces fail, every alternate piece is either good or bad.

Failure Reasons Varied

Material at the press may fail because the material is defective or because the dies, or the set-up of the dies, are not favorable. When a given lot of material performs in a too unsatisfactory manner, it is withdrawn from the operation but not necessarily rejected. Generally this same lot of material is returned to the operation either at the end of that particular run of stamping, or in the next run when there has been an opportunity to improve the die condition or setting, and it frequently happens that material which will not work at all when first run, will run successfully at another time.

It is realized that all material should have a thorough trial before rejection. A contrary policy would increase costs to producers as well as to the Budd company.

The samples which are withdrawn from the run for purposes of test are each cut up into several test pieces. It is usual to take three test pieces in the longitudinal direction and three in the transverse direction, with reference to the final direction of rolling of the sheet. The test pieces are cut 8 inches long and ¾ inches wide. In testing, a record is made of the tensile strength, yield point and elongation in 2 and 8 inches.

Records of tests are always classified with reference to certain stampings. It thus is possible to compare the production records and the test records for any particular stamping. The range of test results shows quite clearly the range of physical properties which must characterize those sheets from which good stampings are to be made. The information obtained from these tests is naturally available to all departments at the plant and also is supplied freely to the mills from which the company obtains its material. The company cooperates closely with the laboratories of the steel mills and believes that by this means it probably attains more quickly to a satisfactory solution of the problems that arise.

Production First Objective

The object at the plant is to make stampings, not tests, so that the testing is held within bounds as far as possible. The tests in no sense are employed to afford grounds for accepting or rejecting material, but to explain good or bad performance. The manner in which the results in connection with a certain stamping showed that steel which proved satisfactory for this stamping had an average elongation of 27 per cent in 8 inches. Sheets obtained from a certain mill failed to run successfully through the dies and tests showed that the sheets which were failing had an elongation of only 23 per cent. When shown the test records the mill made certain modifications which resulted in its being able to ship sheets showing around 27 per cent elongation, and since then there has been no trouble with the sheets from this mill.

Essentially, the Budd company buys steel on the basis of its performance in the dies. The supplier is informed of the nature of the operation and is expected to ship steel which will prove satisfactory for that operation, and when there is any question, he is given the benefit of all related data possessed by the Budd company. After shipment the steel is judged by its performance. Where an unusual percentage of failures develops, the company endeavors to follow a fair and just policy. If it is found that the mill has shipped unsuitable steel for an operation in which there is no usual difficulty, the mill is asked to bear the resulting loss. On the other hand, where a mill is furnishing steel for some new application, or for an operation offering unusual possibilities for failure, the company makes allowances therefor in making its claims for failure. The company's policy is aimed at encouraging the mills to continue development work which will further promote the possibilities of increasing the usefulness of flat steel in the volume production of stampings.

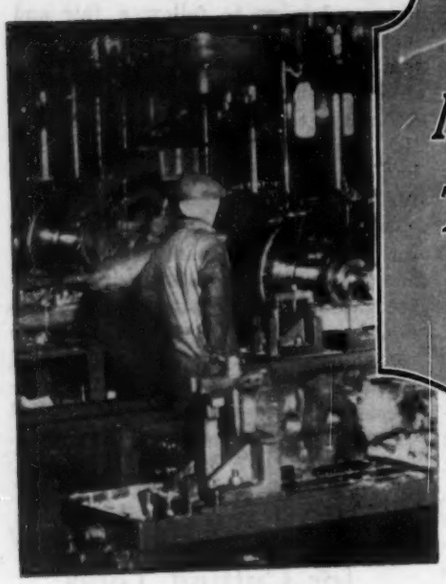
To Introduce New Alloy for Cutting Tools

A new cutting tool material of the tungsten-carbide type, bearing the name "Haystellite," is to be placed on the market shortly by the Haynes Stellite Co., Kokomo, Ind. This alloy was introduced a short time ago for use as a diamond substitute on oil well bits and for drawing dies and is said to have been extremely successful for these applications. A modification of the original alloy has been found to be valuable as a cutting metal. Laboratory and shop tests, the latter in a few of the largest production shops in the country, have been in progress for several months.

Most of the tungsten-carbide tools at present on the market are prepared by the sintering process. The new Haynes Stellite product is different in this respect, in that it is a cast alloy. It is made by a special process and is said to show remarkable cutting quality and uniformity. In composition the material differs radically from stellite, a well-known product of the same company.

In so far as cutting tools are concerned, it is understood that the alloy is in the final development stage. Final tests and the manufacture of an initial stock of standard tools will be completed so that tools may be placed on the market some time during the latter part of the year. At the present time, the manufacturer is not in a position to furnish sample tools, but expects to be able to do so in the near future.

Alabama Power Co., Birmingham, Ala., in line with policy of buying everything possible in home territory, has given contract for 100 tons of galvanized iron and steel hardware for transmission lines poles to Birmingham Galvanizing Co.



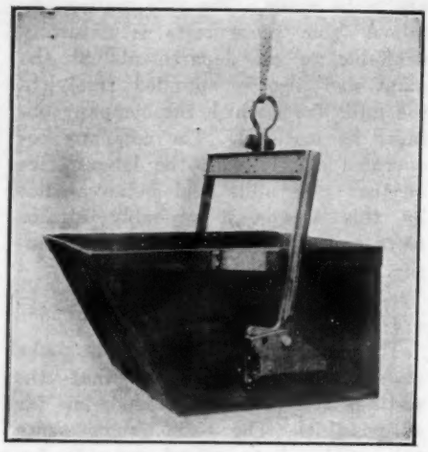
New Machine Tools and Shop Equipment

"Without tools man is nothing, with tools he is all."—Carlyle

Dump Bucket Is Handled Entirely by Crane

No. 143

Edgar E. Brosius Inc., Pittsburgh, recently has taken over the manufacture and sale of the Forsythe-type manually-loaded dump bucket. Use of the bucket is said to eliminate the necessity of having a man stationed at the dumping location, entire handling of the bucket being accomplished by the craneman. The bucket can be dumped from uneven surfaces or slopes and cannot be unlatched in midair. The scoop is electrically welded throughout, the sides, bottom and ends being made of steel plate reinforced around the top with heavy bar iron and on the corners with angle iron. The trunnions and tipper element are steel castings riveted to the scoop, as shown in the accompanying illustration. The sides of the bail are steel castings or rolled bars and the top is a channel or bar. This type of bucket has been in service for several years in various steel mills, handling roll scale, spiegel, hot cinder, hot crop ends from shears and saws, concrete, sand, gravel, dirt, brick, coal, etc.



No. 143—Manually-loaded dump bucket

New Alloy Has High Acid Resisting Qualities

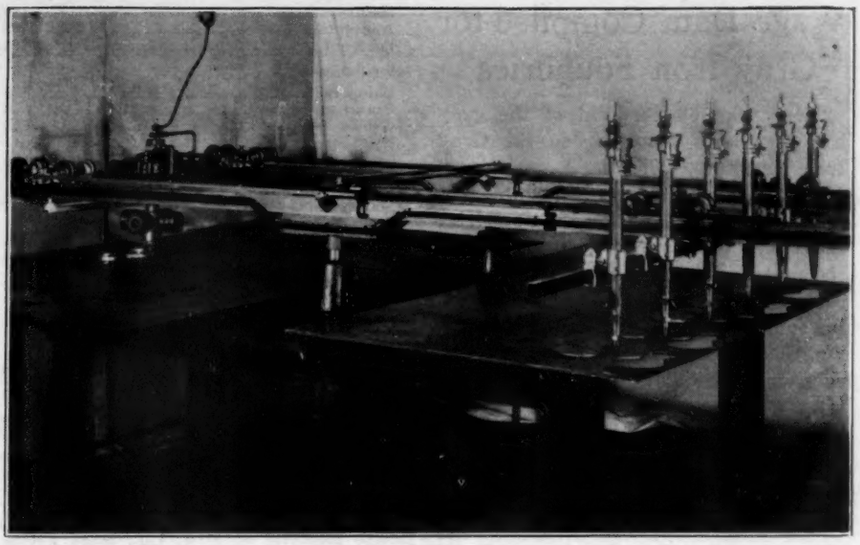
No. 144

Burgess-Parr Co., Moline, Ill., has developed a new nonferrous alloy to meet the demand for a machinable metal which will resist strong corrosive media. This metal is a complex alloy based on the nickel-copper-chromium ternary system, and containing small percentages of silicon, molybdenum, manganese and tungsten. Developed originally for use in calori-

Iron Trade Review's Calendar of New Equipment

Item	Comment	Builder	No.	Date Described	Page
Die head	Self-opening and nonrotating with integral trip	Murchey Machine & Tool Co.	125	June 20	1664
Generators	200, 300 and 400-ampere capacities for arc welding	Westinghouse Electric & Mfg. Co.	126	June 20	1664
Spot welder	Also may be used for multiple projection welding	Taylor-Winfield Corp.	127	June 20	1665
Sander	Vertical belt type for sanding irregularly shaped parts	Porter-Cable Machine Co.	128	June 20	1665
Switch	Small manual starting switch; throws motor across line	General Electric Co.	129	June 20	1665
Buffer	Dual-motored with flexible rope drive	Hisey-Wolf Machine Co.	130	June 20	1665
Arc welder	Gas engine driven; 300-ampere generator	Westinghouse Electric & Mfg. Co.	131	June 27	1721
Arc welder	Controls are unified and improved; welded assembly	Lincoln Electric Co.	132	June 27	1721
Lathe	Automatic; for machining lighter types of work	Seneca Falls Machine Co.	133	June 27	1722
Metal cutting machine	12-inch automatic cutting and piercing machine	S. A. Asquith & Son	134	July 4	10
Belt idler	Exerts variable pressure on belts to take up slack	Harry M. Perry	135	July 4	10
Saw	Heavy-duty cold metal saw; four speeds, five feeds	Steinle Turret Machine Co.	136	July 4	10
Radiator finisher	Radiator loop boring, facing and tapping machine	Moline Tool Co.	137	July 4	11
Spot welder	Three-speed, flexible-rope power drive attachment	Thomson Electric Welding Co.	138	July 4	11
Drills	Design permits close-up drilling; ⅛ to ⅞-inch sizes	Goodell-Pratt Co.	139	July 4	12
Chucking machines	Automatic platen and indexing turret types	Foster Machine Co.	140	July 4	12
Speed reducers	Fractional-horsepower motor-driven worm and gear types	Janette Mfg. Co.	141	July 4	12
Compressors	Air compressors having improved bearing design	Worthington Pump & Machy. Corp.	142	July 4	12
Bucket	Manually-loaded dump bucket; welded scoop	Edgar E. Brosius Inc.	143	July 11	86
Alloy	Nonferrous; machinable and highly resistant to acids	Burgess-Parr Co.	144	July 11	86
Switch	Magnetic; throws small motors across the line	General Electric Co.	145	July 11	87
Controllers	Reversing drum controllers for heavy-duty work	Westinghouse Electric & Mfg. Co.	146	July 11	87
Metal polishers	Motor-driven; 7-foot flexible shafts	Stow Mfg. Co.	147	July 11	87
Shape cutter	Six-torch universal shape cutting machine	General Welding & Equipment Co.	148	July 11	87

meter bombs, its high resistivity and machinability have made it adaptable to pump parts, valve parts, stirring spindles and similar parts. Tensile strength of the alloy is 73,000 pounds per square inch; brinell hardness, 137; melting point, 1300 degrees Fahr.; specific gravity, 8.3; specific heat, 0.112; and it is slightly harder than cast steel in machinability. It is highly resistant to all acids, the loss in milligrams per square centimeter of a rough sandblasted sample immersed for 30 days in a 25 per cent quiescent solution of sulphuric acid being only 1.94. The metal is resistant also to alkalies and salts. Bromine solution and a 25 per cent hydrochloric acid have the strongest effect on the alloy.



No. 148—Six-torch universal cutting machine mounted on testing stand

Magnetic Switch Throws Motors Across Line

No. 145

General Electric Co., Schenectady, N. Y., has placed on the market a new magnetic switch designed for throwing small motors directly across the line. It can be used also as a primary switch for slip-ring motors having secondary control. The enclosing case is of the drawn-shell type with ample room for wiring. The reset button for the overload relays extends through a hole in the cover allowing its use without removing the cover. Improvements on the switch include the use of a molded shaft which will not stick in the bearings, thermal overload relays with interchangeable heater units, silver contacts on the holding interlock, an E-frame magnet and restricted-type blowouts. Horsepower ratings at various voltages for the standard squirrel-cage type of motor are as follows: 110 volts, 7½ horsepower; 220 volts, 15 horsepower; and 440 to 600 volts, 15 horsepower. For straight starting duty where no jogging is encountered, the 15-horsepower rating on 440-600 volts can be increased to 20.

Drum Controllers Built for Heavy Usage

No. 146

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has announced a new line of reversing drum controllers designed for both direct and alternating current service in operating cranes, hoists, bending rolls and similar machinery. The drum cylinder consists of rolled brass supporting disks, assembled on a micarta insulated steel shaft between brass and micarta insulating collars. The contact segments are bolted to the supporting disks in such a way as to avoid burning the bolt heads. Segments are reversible and burned ends may be trimmed down to form shorter segments. Fingers are of the compensating self-aligning type. Several types of operating heads can be used with this controller to suit the requirements of various installations. The horizontal handle with spring return, standard horizontal handle, vertical handle, bevel gear head for right angle drive and the rope wheel with or without spring return, all can be mounted in any of four positions on the controller top. A simple latch is located in the handle to prevent its moving by accidental knock, and a handle lock safeguards against unauthorized operation.

Portable Flexible-Shaft Assemblies Built

No. 147

Stow Mfg. Co. Inc., Binghamton, N. Y., has placed on the market two new portable flexible-shaft units for metal finishing operations. One is equipped with a 7-foot flexible shaft and flexible-back polishing pad while the other is provided with a clamp spindle for wheels, brushes and buffers. The latter is known as a metal-working assembly and the former as a refinishing and production assembly. Each model is made in two sizes, with ¼-horsepower and ½-horsepower electric motors. The motor is belted to the end of the flexible shaft and is mounted on a rectangular metal base. Three speeds are available by shifting the belt on the shaft and motor pulleys which are of the three-step type. The stationary end of the flexible shaft is mounted rigidly on an upright post bolted to the assembly base.

Six-Torch Cutting Unit Is Automatic

No. 148

General Welding & Equipment Co., 66 Brookline avenue, Boston, recently has developed a six-torch automatic shape cutting machine for use in mass fabrication of small, flat steel shapes. The unit consists of six cutting torches mounted on a horizontal arm, all moving in unison and controlled through the movement of a master stylus. The stylus is guided from a templet and the outline which it traces is transmitted to the six cutting torches. The interval between the torches is adjustable. The machine is assembled largely by welding and is shown in the accompanying illustration mounted on a testing stand. Current for the electric motor drive is obtained from the standard light socket. Connections are provided on each torch for acetylene and oxygen.

Offers Bulletin Service

The American Institute of Steel Construction Inc., has initiated a technical data bulletin service for the benefit of its members. These bulletins will contain the results of engineering research and outline the best methods of steel construction.

The first bulletin treats of the effect of temperature on structural steel, and will be followed at regular intervals by bulletins covering the latest technical information regarding design and fabrication.

All tungsten ore in stock at Shanghai, China, for export, is now under contract and no free material is available for sale.

Wage Data Compiled for Gray Iron Foundries

More than 68 per cent of the gray iron foundries reporting to the Gray Iron institute, Cleveland, pay employes by check, a recent employment survey reveals. Of the 120 foundries reporting, with 9809 employes, 82 use the check system and 38 pay with cash. Thirty-two plants are operating on the 8-hour day basis, 59 on nine hours and 13 on ten hours. The country was divided in three districts for compiling wage data, the average hourly earnings for all being as follows:

Molders:	
Bench	$.770
Floor	.892
Loom	.653
Machine	.729
Helpers	.502
Apprentice	.534
Foremen	1.06
Coremakers:	
Men	.741
Women	.448
Machine, Men	.631
Machine, Women	.373
Helpers	.459
Apprentice	.474
Foremen	.908
Patternmakers:	
Wood	.824
Metal	.770
Apprentice	.465
Foremen	1.03
Miscellaneous:	
Chippers	.539
Crane operators	.570
Cupola tenders	.622
Flask makers	.641
Grinders, Rough	.496
Inspectors, Castings	.513
Labor, common	.477
Maintenance men	.635
Pourers	.697
Sand Blasters	.547
Welders:	
Acetylene	.683
Electric	.594
Combination	.696

Places Large Order for Electrical Units

Youngstown Sheet & Tube Co. has placed an order with the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., for electric equipment amounting to about $550,000, to be installed in the new 10-inch and 14-18-inch merchant mill at the Indiana Harbor works of the Youngstown company.

Six direct-current motors ranging in horsepower from 500 to 1500 will be provided for driving the 10-inch mill. The 14-18-inch mill will have a 5600-horsepower motor which will drive roughing stands from both ends of an extended shaft. Two 1500-horsepower motors will drive the finishing stands.

Three 4000-kilowatt synchronous motor-generator sets will supply power to the motors. Switching equipment for all this apparatus is of the vertical-lift truck, compound-filled type.

Industrial Advertisers Arrange Meeting

Cincinnati has been selected for the eighth annual convention of the National Industrial Advertisers association, Sept. 30-Oct. 2. Arrangements for the meeting are in the hands of Jesse R. Harlan, chairman of the convention committee of the Cincinnati Association of Industrial Advertisers, and advertising and sales manager, Stuebing Cowan Co., Cincinnati.

Earnings of Perfect Circle Co., Newcastle, Ind., in the first five months increased 60 per cent over last year.

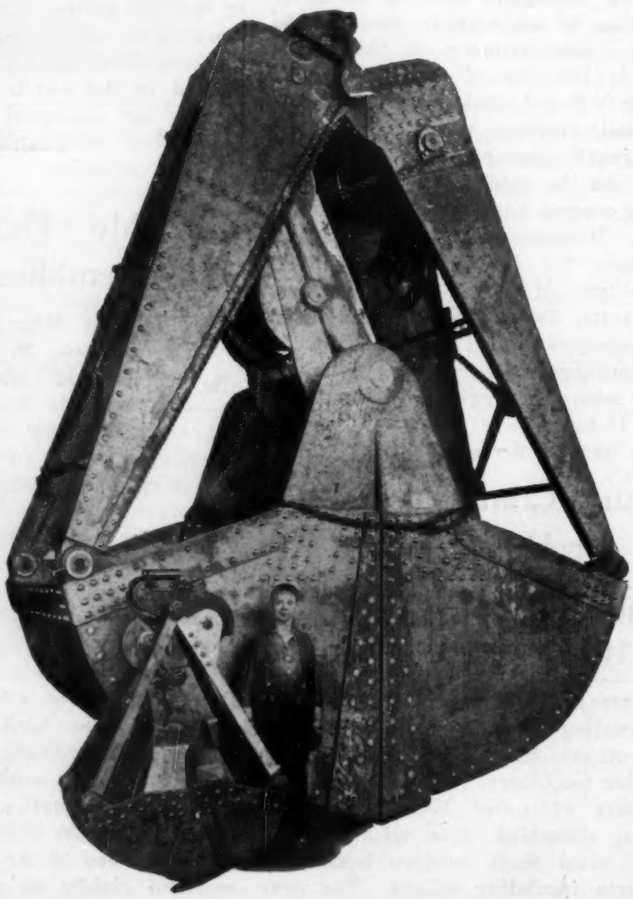
Clamshell Bucket Believed To Be World's Largest

TEN gross tons of coal at one scoop is the capacity of a giant 16½-yard clamshell recently built by the G. H. Williams Co., Erie, Pa., for use at the docks of the Donner Steel Co., Buffalo. Some idea of the bucket's unusual size will be gained from the accompanying illustration which shows a small ⅜-yard clamshell beside the large model.

The new coal bucket, which is believed to be the largest in the world, measures 18 feet 9 inches from the bottom of its scoop to the top of the head. When lowered open upon a pile of coal the scoops have a spread of 19 feet and cover an area of 133 square feet.

The general design is the standard four-rope type, which gives the operator positive control even on a high bridge crane where the bucket must be lowered a considerable distance. Sufficient spread is given to the four lines to avoid twisting and fouling. The twin power arm design is claimed to make important saving in cable expense, due to the prevention of cable twisting and the elimination of side leads of closing cable. The closing line sheaves on each of the power arms work always in one plane, giving a straight line pull. The bucket is built entirely of riveted steel plates and shapes.

To enable the bucket to handle the maximum weight with the power available, it was necessary to conserve as much weight as possible in the construction. The net weight is 28,000 pounds.



Editorials

Standards Work Wins Recognition

ANOTHER forward step in American standardization work is to be taken this week when direction of activities of the American Standards association passes into hands of a number of the country's leading industrial executives. Full control of national standardization policies, since the organization of the association as the American Engineering Standards committee in 1919, has been entirely in the hands of engineers and scientists.

Certainly no complaint can be registered against the previous management, for the ground work has been laid well and industry already has profited beyond calculation through adherence to standards set up by the body. It is rather a tribute to the engineering and scientific professions that industrial executives have shown increasing interest in national standardization work and now are willing to co-operate in a program which should have far-reaching results.

A board of directors composed of nine representatives of railroads, public utilities and manufacturing industries has been organized to aid and direct the work of the association. Recognition by industrial executives of the tremendous savings to be made through standardization led to the reorganization to give control of standardization policies to industrial leaders. It is understood, of course, that the actual formulation and approval of standards will remain with the engineers and technologists. As one of its first acts the new board probably will undertake an intensive campaign to finance national standardization activities on a larger scale than heretofore.

The American Standards association includes in its membership some 40 technical, trade and industrial organizations and government departments and thus far has confined its activity to the United States. Formal invitation has been tendered to affiliate with the International Standards association and the new board is expected to take action on this important subject shortly.

Chicago the Steel Market Prize

CHICAGO'S pretension as the market prize of the steel industry receives important support from the decision of the United States Steel Corp. to add 14 open-hearth steel furnaces, with commensurate finishing capacity, including a wide flange structural mill, at the Gary and South Chicago works of the Illinois Steel Co. By enlarging its ingot capacity in the Chicago district 1,500,000 tons annually the Steel corporation embarks on its most ambitious expansion program since the war.

Broadly speaking, Chicago district production has never equalled peak demand, and in the lush first half of 1929 considerable overflow tonnage has found its way east. Between one-third and one-half of the steel consumption of the United States is in the greater Chicago district. Michigan and its great automotive industry is a few cents nearer Chicago than Pittsburgh when measured by freight rates. One-half the freight cars built in the United States roll out of Chicago shops. One Chicago district consumer alone is taking 20,000 tons of strip monthly, and buys plates in lots of 100,000 tons.

The attractiveness of this market has been recognized every time a merger of "independent" producers is rumored, and such rumors have been legion. No rumor is complete without inclusion of the Inland Steel Co., the largest "independent" in the district, as the western segment. It has been reported frequently in the past five years that such eastern producers as Bethlehem Steel Co. and Jones & Laughlin Steel Corp. were planning Chicago district works, the latter possessing a desirable site.

Of the eastern "independents," only the Youngstown Sheet & Tube Co. now has production in the district. Competitors who had an equal chance to acquire the Steel & Tube properties in 1923 must now regret failing to pay any price for them. It has been understood that failure of eastern "independents" to acquire a going plant in the West would result in the creation of new production facilities. Meanwhile, the Steel corporation intrenches itself more deeply against intensified competition, and water shipments, adverse freight rate structures and deferred mergers to the contrary, the Chicago district forges ahead.

Consolidations Steady Prices

THAT consolidations have not been a special influence in increasing prices in the past quarter century, but on the contrary have tended to steady them, is clearly demonstrated by statistical evidence. A study of 60 lines of

manufacturing shows the upward trend of prices from 1900 to 1925 was less pronounced in those branches in which consolidations were dominant factors in the market.

A survey which was conducted recently by the National Industrial Conference board reveals that in 26 branches of the latter classification prices advanced only 28.8 per cent, compared with 110.6 per cent in 21 lines of manufacture which were not affected by consolidations, and 70.7 per cent in the remaining 13 branches in which consolidations were limited scope. When prices were reduced to dollars of equal purchasing power as in 1913, the rise in industries where consolidations were dominant was only one-half of that in those where there were no mergers.

Eighteen branches of manufacturing were studied for productive efficiency, including representative groups of consolidated and independent concerns, for the period 1920-1926. The consolidated groups in general showed the most progress, especially in 1926. In one instance the consolidation output was 115 per cent larger per hour of labor employed than the average for independents. Increases in productivity were registered for independent concerns, but the maximum gain in this group was only 55 per cent per hour of labor. Additional evidence was obtained to show that consolidations have moderated seasonal fluctuations.

Steadier employment and prices, and improvement in productivity, indicate the economic advantages which the general public has shared in consolidations.

Steel Is Key To Water Routes

CONSIDERABLE activity among builders of steel river barges has attended the final steps in fitting the Ohio river for all-year transportation and the growing interest in transportation over other inland streams. Approximate figures for barge builders in the Pittsburgh district, where this work centers, show that for the first six months of this year orders have been placed for 260 steel hulls, involving about 47,000 tons of steel plates and shapes in their construction. Four years ago this represented a year's business for the industry.

The promising outlook for heavily increased river transportation indicates that barge building will provide a growing medium of steel consumption. Barge construction today almost entirely is concentrated upon the use of steel. Prior to 1921 many barges were made of wood, but increased lumber costs and the longer life and greater capacity of steel equipment have brought the latter to the front. Developments in barge construction also have broadened the transportation market of this carrier and tends to reduce cost.

Not many years ago only basic raw materials were carried by barge; today, oil, tar, cement, general merchandise and all types of finished steel products can be moved over the rivers. As in the past, steel producers continue to make the greatest use of the Ohio river system, with a regular service for moving coal to the ovens and finished steel to distant points in the South and Southwest, but other industries are showing an awakened interest in water shipments.

The economic advantages in use of inland waterways point to considerable development in the building up of river craft and terminal facilities over future years. In this work, as in the creation of our primary transportation system—the railroads—the steel industry will play an important part.

No "Normal" If There Is Vision

PRIDEFUL as are the monthly and quarterly production records which have been achieved in pig iron and steel ingots this year, there is a compensating, perhaps a disturbing, reaction. Production records are iconoclastic, they never leave an industry where they found it, just as a man cannot readily return to positions outgrown.

In May and in the first half year more pig iron and steel ingots were made than in similar periods in history. On the surface, at least, these extraordinary peaks were attained without undue strain. A year ago it would have been deemed unlikely that within a short time as many as 125,753 tons of pig iron and 195,302 tons of ingots would be turned out daily. Now that it has been done, it is conceivable that if demand warranted it next fall, a still higher average could be accomplished.

The damage such records do to that intangible measuring stick called "normal" is appalling. What is normal anyway? What is a normal rate of production is as difficult to ferret out and corral as to determine exactly who is a normal person.

Is the average of last year normal? During the war the steel industry made as high as 153,289 tons of ingots daily, yet the descent from the May record to the war's greatest effort would be 20 per cent. Nineteen twenty-three was a big steel year, but would production be at a normal rate if it declined over 25 per cent to the daily average for that year?

Normal is indeed a moving, shadowy yardstick, and the more the industry keeps its eyes to the front, searching out still higher levels, the less will be the necessity for turning back, which the very word normal implies.

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Heat Treating of Army Rifle Steel Is Standardized. Page 75.

ANOTHER pull on the center of the steel industry in the direction of the Middle West is exerted by the United States Steel Corp.'s announcement of expansion plans in the Chicago district, as referred to elsewhere in this issue. Illinois Steel Co.'s ingot capacity is to be enlarged 1,500,000 tons; 14 open hearths are to be added, with proportionate finishing capacity, including a wide flange structural mill. Too many important steel orders have been going East, through sheer inability of Chicago mills to supply the demand. This outweighs that word of warning against overexpansion, heard recently.

The Readers' Page

CONTENTS

For July 11, 1929

SPECIAL ARTICLES

Heat Treatments for Army Rifles Well Standardized—By J. B. Nealey..... 75

Straightens and Surfaces Billets on Special Machines—By Leon Cammen.. 79

Metallography Simplified for Shop Use—(Chap. XIII-Concluded)—By E. Preuss 82

Automobile Body Maker Buys Steel on Basis of Performance—
By Dr. George L. Kelley..... 84

Digest of Machine Tools..... 86

Editorials..... 89

BUSINESS TREND

Seasonal Motor Car Decline Small—
By John W. Hill..... 92

Auto Production... 92
Pig Iron Situation.. 93
Blast Furnace Rate. 93
Bituminous Coal Output..... 94
Foundry Equipment Orders..... 94
Iron and Steel Price Index..... 95
Railroad Freight Traffic..... 95

MARKET REPORTS

Review of Markets..... 96

Iron and Steel Prices 96, 97, 98, 101, 111, 130

Pig Iron..... 99
Coke..... 100
Ferroalloys..... 100
Nuts, Bolts, Rivets.. 100
Iron, Steel Scrap... 101
Semifinished..... 102
Bars..... 103
Plates..... 103
Pipe..... 104
Sheets..... 105
Tin Plate..... 105
Structural Shapes.. 106
Reinforcing Bars... 107
Iron Ore..... 108
Railroad Equipment 108
Cold Finished Steel 109
Wire and Nails..... 109
Strip Steel..... 109
Nonferrous Metals.. 110
Coke By-Products.. 110
Warehouse Markets. 111
Pacific Coast Markets 112
Foreign Markets.... 121
Machinery Markets 124
Crane Inquiry and Awards..... 124

GENERAL NEWS

Illinois Steel Co. Plans New Structural Mill..... 113

June Ingots Almost Record..... 114

Industrial Men in the Day's News—
A. J. Lockwood..... 115

Men of the Industry 116
Here and There in Industry..... 118
Obituary..... 120
Construction and Enterprise..... 125
New Incorporations 127
Trade Publications. 128

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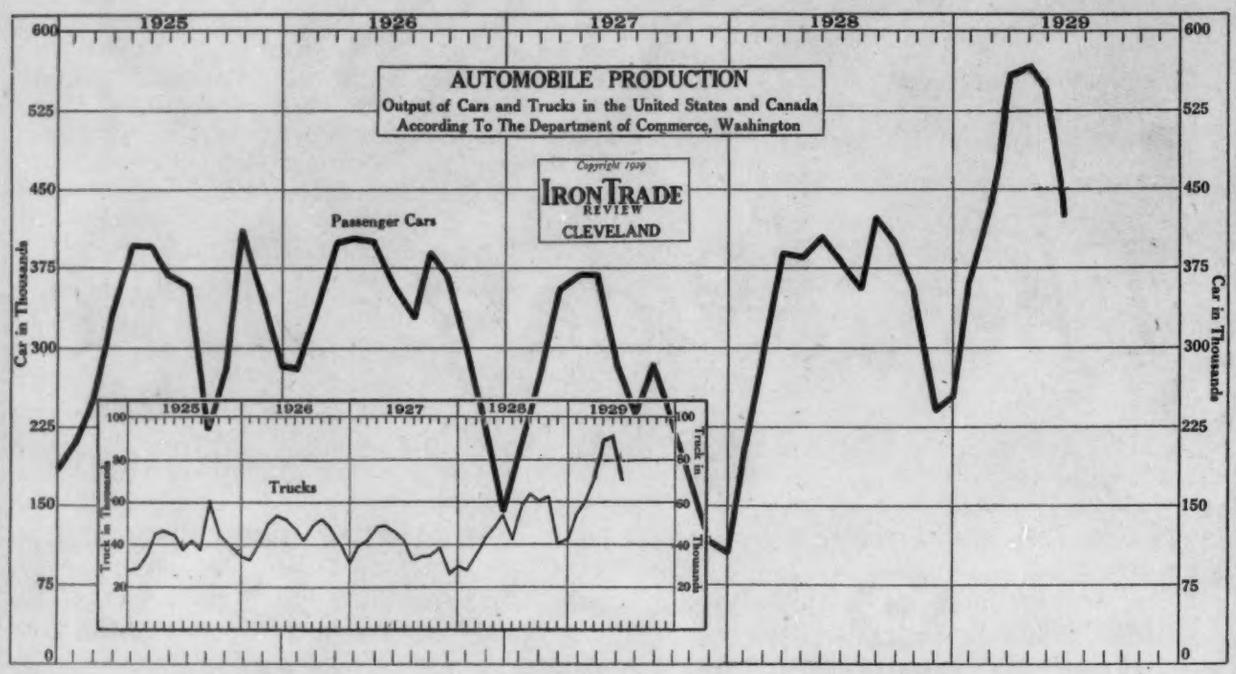
The Business Trend



Seasonal Motor Car Decline Moderate

By JOHN W. HILL, Financial Editor

AUTOMOBILE industry during the first half of the current year has done the impossible. It has turned out, in that period more than 3,000,000 passenger cars and trucks. At the start of the year, when predictions were made that such a production record for the first half was probable, there were many reasons to believe the actual results would fall short.

BUT with preliminary estimates now available for June indicating that the month's total for the United States and Canada was 536,309 cars and trucks, it is seen that the aggregate for the half year actually was 3,380,000 units. In fact, production for the first six months of 1929 was greater than for any full year in the history of the industry prior to 1923. It was about 45 per cent greater than for one year ago.

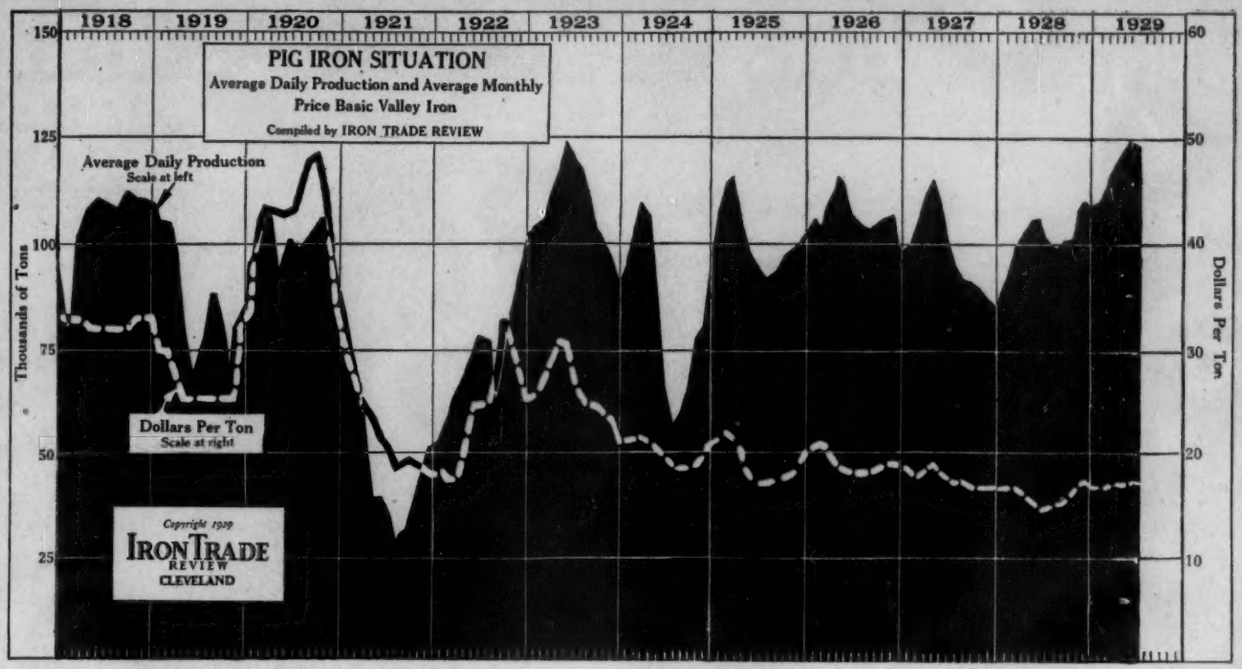
THE most important fact about the industry, however, is not the big output of past months but the continued high rate of production at a time when substantial seasonal curtailment is in order. The June figure, while below the 635,000 units for May and 662,000 for April was by far the largest output for any June. The total for June, 1928, was 435,195 cars and trucks.

THE continued large scale production of cars and trucks is pretty largely due to one or two producers of low-priced cars. Most producers have reduced production schedules in accordance with seasonal conditions. The big output of the past few months has placed large stocks of cars in the hands of dealers and in some sections the used car situation is reported as unfavorable. However, no serious glut of new cars is in evidence.

IN FACT, the big increase in cars is chiefly due to the return to full production of Ford. Whereas the industry exclusive of Ford increased output by 15 per cent in the first five months of the year compared with 1928, Ford's production gained practically 500 per cent.

IF FORD was blamed for the severe downturn in general business in the summer of 1927, it may be that he will receive credit for supporting the structure of activities in the current year. Certain it is that Ford output is not slowing down, and this means a sustained tremendous consumption. Above chart is based on department of commerce statistics to June, with national automobile chamber of commerce report for June.

The Business Trend

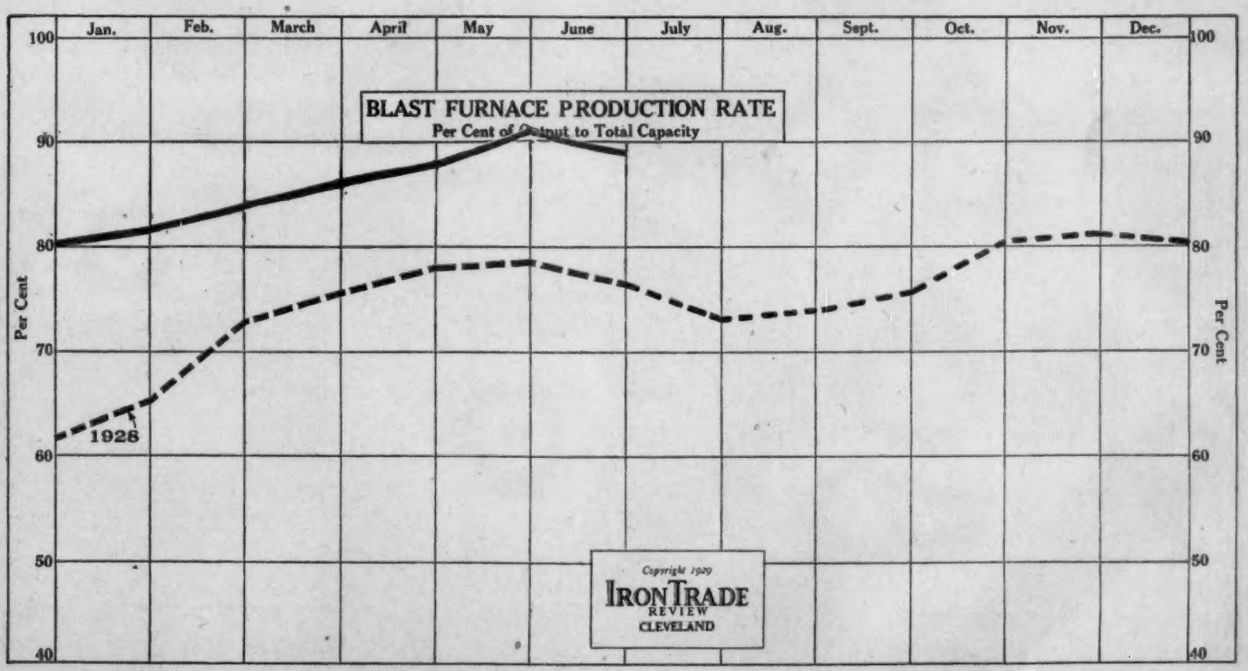


Pig Iron Situation

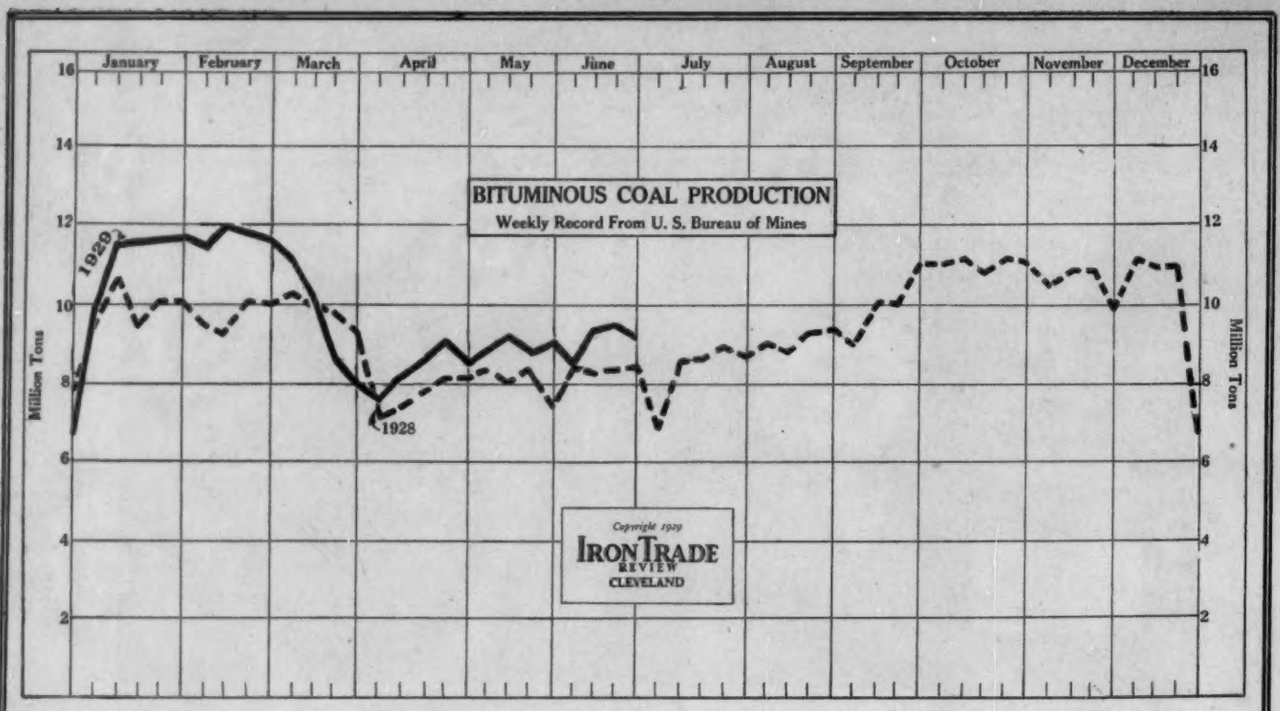
PRODUCTION of pig iron in June reached the highest daily average ever attained for that month in any year. The rate of output was 123,853 tons, compared with 125,753 tons in May and 102,745 tons in June, 1928. The month's output was exceeded only two times before; in May, 1929, and May, 1923. For the first half of the year the production was 21,638,016 tons. This was greater than the previous first half record of 20,828,401 tons in 1923. Last year's figure was 18,510,463 tons.

Blast Furnace Operating Rate

ACCORDING to the estimate of the American Iron and Steel institute, the aggregate capacity of the country's blast furnaces was 50,367,665 tons at the close of 1928. In June the production of pig iron represented 89.9 per cent of the total capacity of the furnaces. This was only slightly less than the production ratio of 91.1 per cent in May, the peak for the year. In June, 1928, the production rate was 76 per cent and in June, 1927, it was 73.2 per cent. In January, 1929, the rate was 80 per cent.



The Business Trend

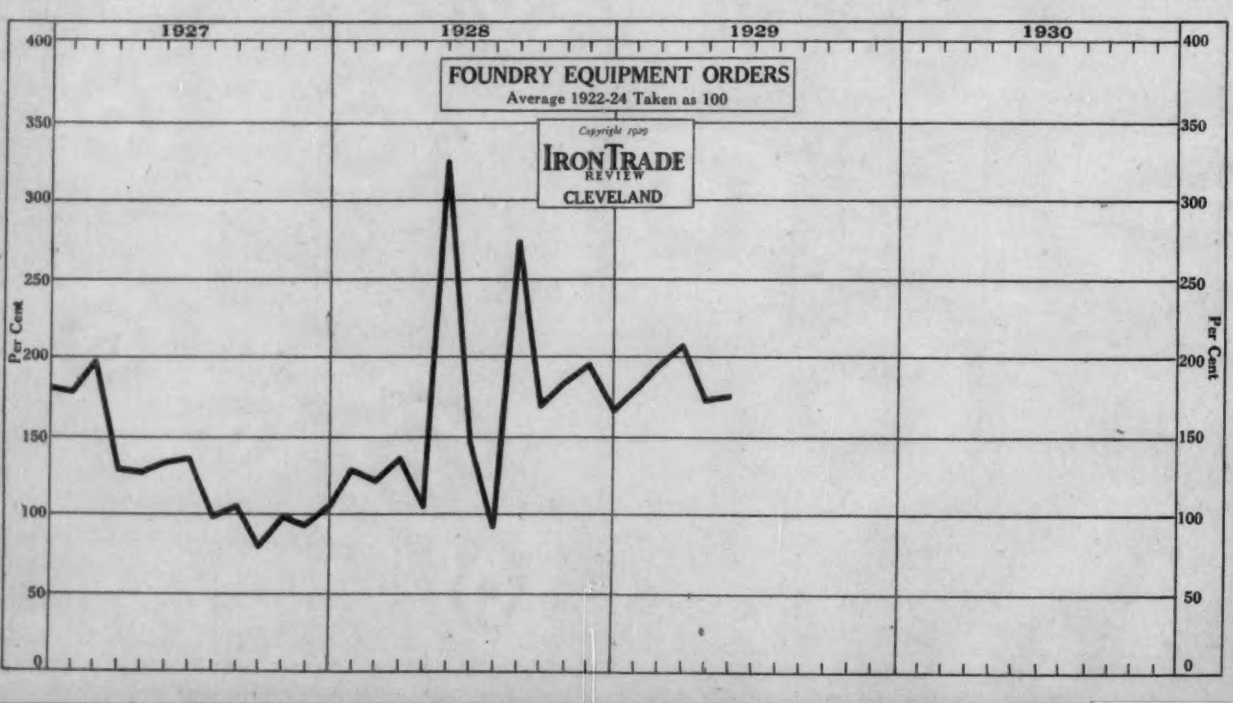


Bituminous Coal Output

PRODUCTION of soft coal this year is running well ahead of that for one year ago. The total output for the year to June 22 was 243,727,000 tons, compared with 224,045,000 tons for the same period of 1928. It fell below that period of 1927, however, when the total stood at 265,081,000 tons. For some months the weekly production has been holding above one year ago and current weekly output is averaging more than 9,000,000 tons, against about 8,300,000 tons one year ago.

Foundry Equipment Orders

ORDERS for foundry equipment have been flowing in at a fairly steady rate during the current year, with the level consistently favorable. During May there was a small increase over April, the index reported by the Foundry Equipment Manufacturers' association standing at 177.7, taking 100 as the average for 1922-24. This was the best volume of orders for any May with the exception of 1928, when the index shot up to 325.6. Unfilled orders for the month were 323 per cent of the 1922-24 average.



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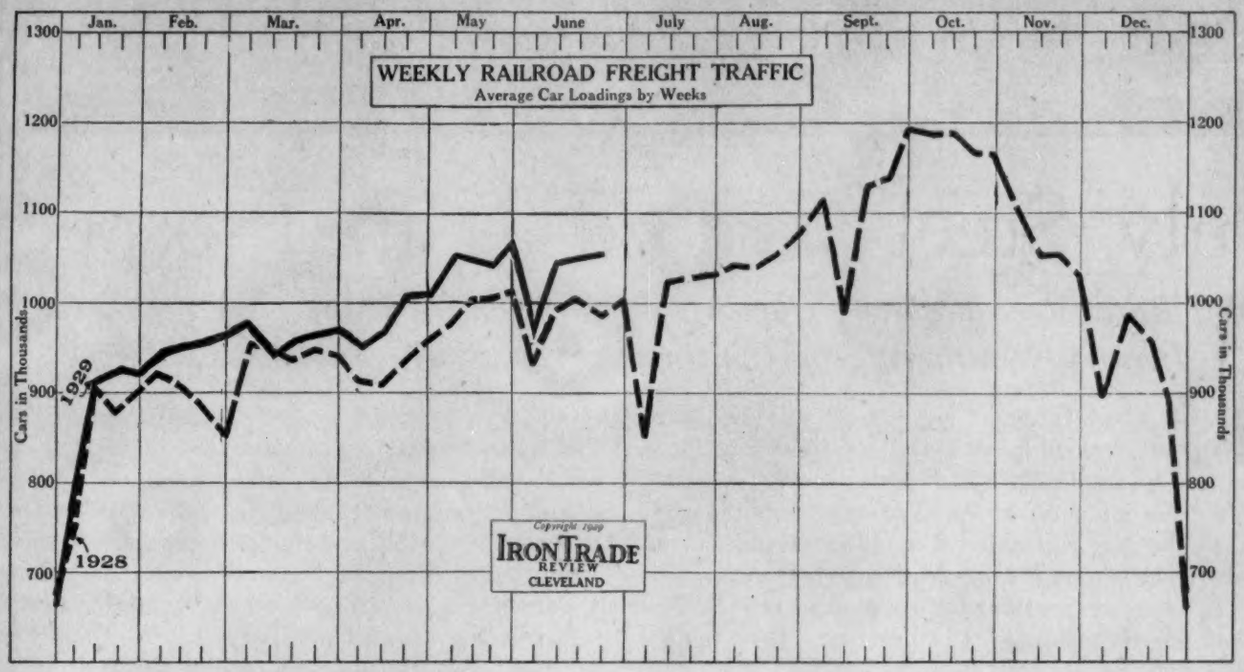
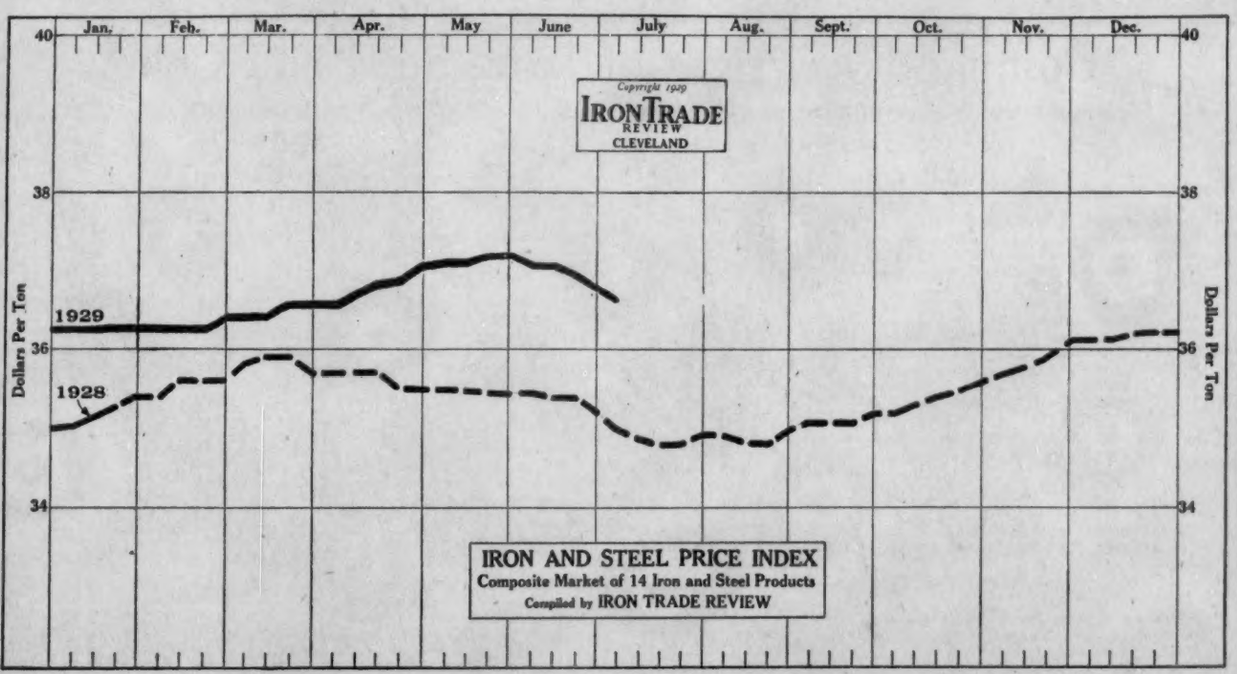


Railroad Freight Traffic

DURING the first 25 weeks of 1929 the number of cars loaded with revenue freight was 24,501,214. This was an increase of 4 per cent over the total of 23,458,074 cars in the corresponding period of 1928 and it established a new high record for these weeks in any year. Loadings for the week ended June 22 amounted to 1,069,046. This was a loss of only 43 cars from the preceding week and a gain of 81,686 cars over the like week of 1928. Large industrial activity is indicated.

Iron and Steel Price Index

AFTER six months of firmness the seasonal slackening of buying demand is having a weakening effect upon iron and steel prices. IRON TRADE REVIEW'S composite market average stood at $36.76 a ton on July 3. This was a drop of eight cents from the average of $36.84 one week before, and it is 37 cents below the top of a few weeks ago. The decline has been due to lower prices for some grades of pig iron, for semifinished steel and for black sheets. Most finished steel is holding.


Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
40 38 36 34
Dollars Per Ton
1929
1928
Copyright 1929
IRON TRADE REVIEW
CLEVELAND
IRON AND STEEL PRICE INDEX
Composite Market of 14 Iron and Steel Products
Compiled by IRON TRADE REVIEW

July Steel Record Is in Prospect

Mill Rates Recede Slowly from May-June Peak—150,000-Ton Pipe Line on Inquiry—Southern Iron Continues Price Slide—Plate Needs Large

JULY thus far has not found its succession to six record months of steel production to be a handicap. For midsummer, specifications for finished steel have not been excelled since the war, an unusual number of large projects is developing, and third quarter contracting is of such proportions as to make last week at Chicago, for example, the best in a year in new business.

Impatient to Get Structurals

Barring the July 4 interruption, July production has been responsive to continue pressure for deliveries, especially of structural material and plates. Backlogs are being whittled down somewhat, but the industry anticipates no dip such as usually characterizes July and August and expects pending projects to mature in time to assure the customary fall uplift.

Among prospective work is a pipe line which four companies are projecting from Texas to Chicago, requiring probably 150,000 tons of pipe up to 24-inch diameter. Secondary rail buying at Chicago promises to put 30,000 tons on mill books shortly. Barge inquiries at Pittsburgh call for 10,000 tons of shapes and plates.

Automotive and farm implement manufacturers have moderated their schedules somewhat, a condition reflected chiefly in soft and cold finished bars and strip. Autobody sheet demand, however, belies a curtailment at Detroit. Neither Ford nor Chevrolet, accounting for 55 per cent of all automotive production, has slackened perceptibly and some other makers are swinging into new models. The steel industry, nevertheless, is taking precautions against cancellations.

Southern Pig Iron Invades North

Prices generally are steady, save for some disturbance in pig iron. Southern iron has been sold as low as $14.50, Birmingham, with reports of still lower levels, in the North, making it competitive with northern iron in most districts. Not in 13 years has southern iron been priced so low. Some concessions on silvery iron also are reported. In heavy finished steel some second

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	July 10, 1929	June 1929	April 1929	July 1928
PIG IRON				
Bessemer, del. Pittsburgh	$20.76	20.76	20.26	18.76
Basic, valley	18.50	18.50	18.00	15.95
Basic, eastern, del. eastern Pa.	20.25	20.25	20.25	19.00
No. 2 foundry, del. Pittsburgh	19.76	19.76	19.86	18.26
No. 2 foundry, Chicago	20.00	20.00	20.00	17.60
*Southern No. 2, Birmingham	14.50	15.25	15.50	15.50
**No. 2X, Virginia furnace	20.00	20.00	20.75	20.50
**No. 2X, Eastern del. Philadelphia	22.26	22.76	22.26	20.76
Malleable, valley	19.00	19.00	18.50	17.00
Malleable, Chicago	20.00	20.00	20.00	17.60
Lake Superior charcoal, del. Chicago	27.04	27.04	27.04	27.04
†Gray forge, del. Pittsburgh	19.13	19.13	19.26	18.76
Ferromanganese, del. Pittsburgh	109.79	109.79	109.79	109.79

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.
†Now based on Pitts. dist. fur. price; formerly on Valley base.

COKE				
Connellsville furnace, ovens	2.75	2.75	2.75	2.60
Connellsville, foundry, ovens	3.75	3.75	3.75	3.50
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngstown	35.00	35.75	35.00	33.00
Sheet bars, open-hearth, Pittsburgh	35.00	35.75	35.25	32.25
Billets, open-hearth, Pittsburgh	35.00	35.75	34.50	32.25
Wire rods, Pittsburgh	42.00	42.00	42.00	42.00

	July 10, 1929	June 1929	April 1929	July 1928
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.95	1.95	1.95	1.85
Steel bars, Chicago	2.05	2.05	2.05	2.00
Steel bars, Philadelphia	2.27	2.27	2.27	2.17
Iron bars, Chicago	2.05	2.05	2.05	2.00
Shapes, Pittsburgh	1.95	1.95	1.95	1.85
Shapes, Philadelphia	2.06	2.06	2.06	2.01
Shapes, Chicago	2.05	2.05	2.05	2.00
Tank plates, Pittsburgh	1.95	1.95	1.95	1.85
Tank plates, Philadelphia	2.15	2.15	2.15	2.10
Tank plates, Chicago	2.05	2.05	2.05	2.00
Sheets, black, No. 24, Pittsburgh	2.85	2.95	2.90	2.65
*Sheets, blue anl., No. 13, Pittsburgh	2.35	2.35	2.15	2.00
Sheets, gal., No. 24, Pittsburgh	3.60	3.65	3.65	3.50
Sheets, black, No. 24, Chicago	3.10	3.10	3.10	2.80
*Sheets, blue anl., No. 13, Chicago	2.50	2.50	2.35	2.15
Sheets, galvanized, No. 24, Chicago	3.85	3.85	3.85	3.65
**Plain wire, Pittsburgh	2.50	2.50	2.50	2.45
**Wire nails, Pittsburgh	2.65	2.65	2.65	2.55
Tin plate, per base box, Pittsburgh	5.35	5.35	5.35	5.25

*Comparisons for April, 1929, and July, 1928, are with old blue annealed base, No. 10. **To large jobbers.

SCRAP				
Heavy melting steel, Pittsburgh	18.25	18.30	18.60	14.10
Heavy melting steel, eastern Pa.	16.50	16.25	17.00	12.75
Heavy melting steel, Chicago	14.75	14.95	15.95	12.30
No. 1 wrought, eastern Pa.	16.25	16.25	16.25	15.25
No. 1 wrought, Chicago	14.85	15.40	16.65	12.30
Rails for rolling, Chicago	17.50	17.50	17.50	14.50

Current Prices for Rolled Steel Products

PRICES IN CENTS PER POUND

STEEL PLATES

Pittsburgh, base	1.95c
Philadelphia, del.	2.15c to 2.25c
New York, del.	2.225c to 2.325c
Boston, del.	2.265c to 2.415c
Chicago, base	2.05c to 2.15c
Cleveland, delivered	2.14c
Lackawanna, N. Y., base	2.05c to 2.15c
Birmingham, base	2.10c to 2.20c
Coatesville, Pa., base	2.00c to 2.10c
Pacific Coast, c.i.f.	2.35c
St. Louis, del.	2.27c
Detroit, del.	2.19c to 2.24c

STRUCTURAL SHAPES

Pittsburgh, base	1.90c to 1.95c
Philadelphia, del.	2.01c to 2.11c
New York, del.	2.195c to 2.245c
Boston, del.	2.265c to 2.415c
Chicago, base	2.05c to 2.15c
Cleveland, delivered	2.09c to 2.14c
Lackawanna, N. Y.	2.05c to 2.15c
Birmingham, base	2.10c to 2.20c
Bethlehem, Pa., base	2.00c to 2.10c
Pacific Coast, c.i.f.	2.35c
Detroit, del.	2.19c to 2.24c

BARS

SOFT STEEL

Pittsburgh, base	1.95c
Chicago, base	2.05c to 2.15c
Birmingham, base	2.10c to 2.20c
Lackawanna, N. Y., base	2.05c to 2.15c
Pacific Coast, c.i.f.	2.35c
Cleveland, base, local mills	1.90c to 1.95c
Cleveland, del., outside mills	1.95c
Philadelphia, del.	2.27c to 2.32c
New York, delivered	2.29c to 2.34c
Boston, delivered	2.265c to 2.415c
Detroit, del.	2.19c to 2.24c
Pittsburgh, cold finishing	2.05c
Pittsburgh, forging quality	2.15c

RAIL STEEL

Chicago Heights	1.95c
Eastern mills	1.85c to 1.95c

IRON

Chicago, base	2.05c to 2.15c
New York, delivered	2.19c to 2.24c
Philadelphia, delivered	2.17c to 2.22c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pittsburgh, billet, cut lengths	2.30c
Stock lengths from mill	2.00c
Chicago, billet	2.40c to 2.90c
Chicago, rail steel	1.95c to 2.05c
Chicago, rail steel, road and bridge work	1.95c to 2.05c
Philadelphia, cut lengths	2.57c to 2.62c

SHEETS

SHEET MILL BLACK, NO. 24

Pittsburgh, base	2.85c to 2.95c
Philadelphia, delivered	3.17c to 3.27c
Gary, Indiana Harbor	3.05c
Chicago, delivered	3.10c
Birmingham, base	3.10c
St. Louis, del.	3.27c

TIN MILL BLACK, NO. 28

Pittsburgh, base	3.00c
Gary, base	3.10c

GALVANIZED, NO. 24

Pittsburgh, base	3.60c to 3.70c
Philadelphia, delivered	3.92c to 4.02c
Gary, Indiana Harbor	3.80c
Chicago, delivered	3.85c
Birmingham, base	3.85c
St. Louis, del.	4.02c

BLUE ANNEALED

Sheets, No. 13

Pittsburgh, base	2.35c
Chicago district mills	2.45c
Chicago, delivered	2.50c
St. Louis, delivered	2.67c
Philadelphia, delivered	2.67c
Birmingham	2.50c

Plates, No. 9 and 10

Pittsburgh, base	2.10c to 2.20c
Chicago district mills	2.30c
Chicago, delivered	2.35c
Philadelphia, delivered	2.52c
St. Louis, delivered	2.52c
Birmingham	2.35c

AUTOMOBILE, NO. 20

Pittsburgh, base	4.10c
Detroit, delivered	4.39c

FURNITURE

Pittsburgh	4.20c

(*Turn to the following page*)

quarter prices have been extended into the third quarter.

In basic materials more than finished products is there an easier tendency. Pig iron selling, as usual, is not active so soon after the turn of the quarter. Lighter demand for beehive furnace coke has not been translated into lower prices. Iron and steel scrap prices are fortified by the record summer melt and occasional softness in price is not descriptive of the entire price structure. Semifinished steel is more plentiful.

In sheets as in most finished products, the decline in production over the July 4 holiday about kept step with the downswing in bookings. At Pittsburgh other consuming lines are practically nullifying the loss in automotive orders. Galvanized and roofing sheet prices are weak. Though tin plate mills are not pressed to make deliveries, the last half is appraised as insuring a 1929 total output equaling that of 1928.

More Barge Work Up at Pittsburgh

With the 150,000-ton Texas-Chicago pipe line in the offing, freight car builders specifying heavily and barge and tank builders active, plates are the most active of the heavy finished lines. Ten thousand tons of tank work is pending at Chicago, with 3900 tons having been closed the past week. Twenty river barges at Pittsburgh will require 10,000 tons. Third quarter bar coverage at Chicago is the heaviest since the war. At New York and Philadelphia each 25,000 tons tons of structural work nears the stage where it will be closed. Much bridge work is up in the West.

Steel corporation subsidiaries again are operating at capacity. Chicago holds at an ingot rate of 95 to 98 per cent, and Pittsburgh at 95. At Buffalo 32 out of 37 open-hearth furnaces are on, and in the Mahoning 47 out of 51 independent open hearths.

June and First Half a Record

June with a daily ingot rate of 195,255 gross tons, or only 47 tons under the alltime record of May, rounded out an extraordinary half year in steelmaking. June's total of 4,881,370 tons brought the six-month total to 28,967,174 tons, 17 per cent above the first half of 1928, the previous peak.

Beginning with February, each month this year has developed a daily rate considerably in excess of last October's the previous summit in steelmaking. To equal the 49,865,185 tons of open hearth and bessemer ingots made in 1928, an annual record, output in the remainder of this year could fall 17 per cent below the last half of 1928 or 24 per cent below the first half of 1929. The best July ingot rate was the 152,224 tons of a year ago, and steelmaking this month could shrink 43,000 tons a day, or 45 per cent and match it.

Composite Market Average

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets Tin Plate, Wire Nails and Black Pipe

This week (July 10, 1929)	$36.72
Last week (July 3, 1929)	36.76
One month ago (June, 1929)	36.99
Three months ago (April, 1929)	36.81
One year ago (July, 1928)	34.91
Ten years ago (July, 1919)	47.86
Fifteen years ago (July, 1914)	22.17

Softness in southern and in eastern Pennsylvania pig iron has lowered the IRON TRADE REVIEW composite of 14 leading iron and steel products 4 cents this week, to $36.72. The average for last month was $36.99.

Current Rolled Steel Prices

PRICES IN CENTS PER POUND UNLESS OTHERWISE INDICATED

Tubular Products Quoted On Last Editorial Page—See Preceding Page For Other Products

HOOPS, BANDS, STRIPS

Hot strip, to 6-in., Pitts.	2.00c
Hot strip 6 to 24-in., Pitts.	1.90c
Hot strip, bands 6 in. and under, Chicago	2.10c to 2.30c
Do, 6 to 24 in.	2.00c to 2.10c
Cooperage stock, Pittsburgh	2.20c
Do, Chicago	2.30c
Cold rolled strip, hard coils, 16 inches and under by 0.100-inch and heavier, base Pitts., Cleve. (3 ton and over)	2.75c to 2.85c
Worcester, Mass. (3 tons and over)	2.90c to 3.00c

ALLOY STEEL

Hot Rolled
F.o.b. Mills
Alloy Quality Bar Base is 2.65c

S.A.E. Series Number	Alloy differential	Net 100 lb. bars
2000	0.25	$2.90
2100	0.55	3.20
2300	1.50	4.15
2500	2.25	4.90
3100	0.55	3.20
3200	1.35	4.00
3300	3.80	6.45
3400	3.20	5.85
4100 0.15-0.25 Mo.	0.50	3.15
4100 0.25-0.40 Mo.	0.70	3.35
4600 0.20-0.30 Mo. 1.25-1.75 Ni.	1.05	3.70
5100 0.60-0.90 Cr.	0.35	3.00
5100 0.80-1.10 Cr.	0.45	3.10
5100 Chrome Spring	0.20	2.85
6100 Bars	1.20	3.85
6100 Spring Steel	0.95	3.60
Chrome Nickel Vanadium	1.50	4.15
Carbon Vanadium	0.95	3.60
9250 (flats)	0.25	2.90
9250 (rounds squares)	0.50	3.15

Hot rolled alloy billets 4 x 4-inch and over take same price per gross ton as same specification alloys bars per net ton. Sizes under 4 x 4 to 2½ x 2½ in. inclusive sold on bar basis plus steel bar card extras for size. Sizes under 2½ in. x 2½ in. take bar price on net ton basis.

COLD FINISHED STEEL

Cold finished steel bars drawn or rolled, Pitts., Chi., c.l.	2.30c
Do, del. Detroit	2.575c
Shafting (turned, polished) Pittsburgh	2.30c
Shafting (turned, ground) mill (Depending on size, 1 3/16 to 7-inch)	2.65c to 3.10c
Cold finished steel bars, Cleve.	2.35c

WIRE PRODUCTS

F.o.b. Pittsburgh, Cleveland, Ironton base

(Per Pound)	Dealer trade	Large jobbers
Bright plain wire, 6 to 9 gage	2.60c	2.50c
Annealed field wire	2.75c	2.65c
Galvanized wire	3.20c	3.10c
Barbed wire, galvanized	3.40c	3.30c
(Per 100-pound keg)		
Wire nails	$2.75	$2.65
Galvanized nails	4.75	4.65
Polished staples	3.20	3.10
Galvanized staples	3.45	3.35
Cement coated nails	2.75	2.65
Manuf. wire, del. Detroit		
Wire nails, del. Detroit	$2.785 to $2.885	

Joliet, DeKalb and Waukegan, Ill., Anderson, Ind., and Chicago prices $1 per ton over Pittsburgh-Cleveland-Ironton base on products made there; Duluth $2 higher; Worcester, Mass., Fairfield, Ala., $3 higher.

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

Anderson, Ind., $1 higher, Chicago $2 higher, Duluth, Birmingham $3 higher.

CUT NAILS, CHAIN PILING

Cut nails, c.l., f.o.b. mills	2.70c to 2.75c
Cut nails, l.c.l. f.o.b. mills	2.80c to 2.85c
Chain, 1-in., proof coil, Pitts.	6.00c
Sheet piling, base, Pittsburgh	2.25c

CAST IRON WATER PIPE

Prices per net ton
Class B pipe

Six-inch and over, Birming'm	$37.00 to 38.00
Four-inch, Birmingham	41.00 to 42.00
Four-inch, Chicago	49.20 to 50.20
Six-inch to 24-inch, Chicago	45.20 to 46.20
Six-inch and over, New York	38.00 to 40.00
Four-inch, New York	41.00 to 42.00
Standard fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $4 higher than Class B.

TIN AND TERNE PLATE

Prices per 100-pound box Pittsburgh

*Tin plate, coke base	$5.35

Gary, Ind., base 10 cents higher.

Long ternes, primes, No. 24 4.00c to 4.10c

*Price subject to quantity differentials.

WASHERS

Wrought, c.l., Pitts. dist.	$6.50 to 6.75 off
Wrought, c.l., Chicago dist.	$6.70 to 6.90 off
Lock: to dealers	85-5 off
Lock: to consumers	85 off

RAILS, TRACK MATERIAL

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mill	$43.00
Relay rails, Pitts., 60 to 90 lb.	$24.00 to 29.00
Light rails, 25 to 45, mill	$36.00
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.80c
Spikes, small railroad, 7/16-inch and smaller, Pitts.	2.80c
Spikes, boat and barge, Pitts.	3.00c
Spikes, railroad, Chicago	2.80c
Track bolts, Pitts., steam roads	3.80c
Track bolts, Pitts., stand. jobbers	70 off list
Track bolts, Chicago	3.80c
Tie plates, Chicago, Pitts.	$43.00

BOLTS AND NUTS

Birmingham and Chicago

Discounts are for legitimate jobbing or large consuming trade purchasing in full-case lots, apply to lists of April 1, 1927.

Small lots are 55 to 60 per cent off.

CARRIAGE BOLTS

All sizes, cut thread 60 to 70 off

Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.

Eagle list 60 to 70 off

MACHINE BOLTS

All sizes, cut thread 60 to 70 off

Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.

Lag screws	60 to 70 off
Plow bolts, Nos. 1-2-3-7 heads	60 to 70 off
Tap bolts	60 to 70 off
Blank bolts	60 to 70 off
Stud bolts without nuts	60 to 70 off

Stove bolts, 75, 20, 10 and 5 off in pkgs., 75, 20, 10 and 5 with 2½ off in bulk.

Tire bolts 60-5 off

Nuts

Semifinished 60 to 70 off

HEXAGON CAP SCREWS

Milled 80-10-5 off

Upset 1 in. diam. and smaller 5 off

SQUARE HEAD SET SCREWS

Milled 80-5 off

Upset 1 in. diam. and smaller 80-10-5 off

RIVETS

Struc., c.l., Pitts-Cleve.	3.10c
Structural, c.l. Chicago	3.20c
**7/16-inch and smaller, Pitts.	70 and 10 off
Chi., Cleve.	70 to 70 and 10 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Raw Materials and Semifinished Products

SEMIFINISHED MATERIAL

Prices Per Gross Ton
BILLETS AND BLOOMS
4 x 4-inch base

Pittsburgh, open-hearth	$35.00
Pittsburgh, bessemer	35.00
Youngstown	35.00
Cleveland	35.00
Philadelphia	39.30 to 41.30
Chicago	37.00
Forging, Chicago	42.00
Forging, Pittsburgh	40.00 to 41.00
Forging, Philadelphia	44.30 to 46.30

SHEET BARS

Pittsburgh	$35.00
Youngstown	35.00
Cleveland	35.00
Chicago	37.00

SLABS

Pitts., Young.	$34.00 to 35.00
Cleveland	35.00

WIRE RODS

Pittsburgh, Cleveland	$42.00
Chicago	43.00

SKELP

All grades, Pittsburgh	1.90c to 1.95c

IRON ORE

LAKE SUPERIOR ORE
Per Gross Ton, Lower Lake Ports

Old range bessemer, 51½%	$4.80
Mesabi bessemer, 51½%	4.65
Old range nonbessemer, 51½%	4.65
Mesabi nonbessemer, 51½%	4.50
High phosphorus, 51½%	4.40

EASTERN LOCAL ORES
Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%	8.00
Copper free low phosphorus 58 to 65 per cent	nominal

FOREIGN ORE
Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-8% manganese	11.00 to 11.50
North African low phosphorus	12.00 to 12.50
Swedish foundry or basic, 65%, nominal at	9.00 to 10.00
Spanish and North African basic, 50 to 60 per cent	11.50 to 12.00
Newfoundland foundry, 55%	nominal
Tungsten spot and early fut., short ton unit, duty paid	15.50

MANGANESE ORE

Prices do not include duty of 1 cent per pound of metallic manganese contained.

Brazilian	34 to 36 cents
Indian	34 to 36 cents
Caucasian, (53-55 per cent)	36 cents

FLUORSPAR

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$18.00
Washed gravel, import duty paid east. tide., gross ton	$20.15

REFRACTORIES

FIRE CLAY BRICK
Per 1000 f.o.b. works

First Quality

Pennsylvania	$43.00 to 46.00
Ohio	43.00 to 46.00
Illinois	43.00 to 46.00
Kentucky	43.00 to 46.00
Missouri	43.00 to 46.00
Maryland	43.00 to 46.00
Georgia and Alabama	40.00 to 45.00

Second Quality

Pennsylvania	35.00 to 38.00
Ohio	35.00 to 38.00
Illinois	35.00 to 38.00
Kentucky	35.00 to 38.00
Missouri	35.00 to 38.00
Maryland	35.00 to 38.00
Georgia and Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., East Chicago, Ind.	52.00
Birmingham	50.00 to 51.00

MAGNESITE BRICK
Per Net Ton

9 x 4½ x 2½	65.00

MAGNESITE
Net Ton Chester, Pa., and Baltimore base

Dead-burned grain magnesite	40.00

CHROME BRICK
Net ton Chester, Pa., and Baltimore base

9 x 4½ x 2½	45.00

Pig Iron

Market Quieter—Shipments Improving After Holiday Letdown—Birmingham Price Down to $14.50, Lowest in 13 Years

SHIPMENTS of pig iron are picking up after last week's holiday lull, and furnace interests see no serious contrast in the picture as presented through the second quarter, though not expecting the July movement will be as heavy as that of June. The market is quieter, naturally after the heavy selling, and the fact some melters are waiting price developments before placing further quarter business has not yet had an unsettling influence. Furnace and foundry stocks in some districts are the lowest in several years, while producers seldom have entered the third quarter so well fortified with orders. Prices generally are unchanged, but an exceptional instance of heavy furnace stocks in the Birmingham district has led to another reduction of 50 cents to $14.50.

PITTSBURGH, July 9.—Small lot orders are more characteristic of the pig iron market than substantial tonnages. Some melters defer placing forward commitments and are buying only for current requirements, believing prices will go no higher and may be easier. Several buyers have iron due them on old orders as result of light consumption in the second quarter. The steady tone of the last few months led to a fair volume of forward buying, although mainly in small lots. A local melter who recently bought 5000 tons of foundry iron is reported to have obtained a concession from the regular Pittsburgh price. Quotations generally are steady on current business, although there are few transactions to afford a test. One inquiry is pending for 400 tons of malleable. The Westinghouse Electric & Mfg. Co.'s inquiry for Trafford City, Pa., still is pending.

New York, July 9.—Several inquiries for pig iron have been issued for nearby shipment. Some purchasers are waiting price developments before covering full third quarter requirements. Other melters are buying more aggressively on the assumption that any slowing up over the next month or more will not materially affect furnace stocks. At present stocks are said to be the lowest in nearly three years. Prices are unchanged at $17.50 to $18, base, Buffalo, for this territory. Leading sellers estimate 4000 to 5000 tons was placed in this territory in the past week, not including 2000 tons for General Fire Extinguisher Co., Providence, R. I., which included approximately 500 tons of malleable. New inquiry totals 5000 tons. The navy department has entered the market for several grades of foundry iron for eastern yards.

Buffalo, July 9.—Pig iron inquiries include about 2000 tons for Batavia N. Y., 1500 tons for Erie, Pa., and 2000 tons for New England. Former inquiry is being covered slowly, and hand-to-mouth buying is becoming more general. Shipments were resumed on a large scale at the beginning of this week. Buffalo furnaces quote $18, base, furnace as their minimum price for eastern delivery. The district base on this grade is $19.50.

Youngstown, O., July 9.—Most buyers of pig iron appear to have covered their needs well into third quarter. One local interest has disposed of all its surplus stocks of standard bessemer iron, which practically takes it out of the market for this year. Some of this iron went at slightly under $19, valley, it being sandcast. Basic is firm at $18.50, valley, the same as No. 2 foundry. Several fair-size lots of standard copper-free low phosphorus iron have been sold at $27, valley. Rumors of sales of southern No. 2 foundry iron at less than $14.50 appear refuted by actual sales made yesterday at $14.50, Birmingham, by a local furnace interest with Alabama connections.

Pig Iron Prices

Per Gross Ton

Bessemer, valley furnace	$19.00
Bessemer, del. Pittsburgh	20.76
Basic, valley furnace	18.50
Basic, Pitts. dist. fur.	19.00
*Basic, del. Pittsburgh	19.63 to 20.13
Basic, Buffalo furnace	18.00 to 19.00
Basic, del. eastern Pa.	20.25 to 20.65
Malleable, valley furnace	19.00
Mallcable, Pitts. dist. fur.	19.50
*Malleable, del. Pittsburgh	20.13 to 20.63
Malleable, Cleve. fur. for local del.	19.00
Malleabe, Chicago furnace	20.00
Malleable, Buffalo furnace	20.00
Malleable, del. eastern Pa.	22.76 to 23.26
Malleable, Granite City fur.	20.50
No. 1 foundry, Chicago furnace	20.50
No. 1X. Eastern del., Phila.	23.26
No. 1, Buffalo furnace	21.00
No. 2 foundry, valley furnace	18.50
No. 2 fdy., Pitts, dist. fur.	19.00
*No. 2 foundry, del. Pittsburgh	19.63 to 20.13
No. 2 plain, Buffalo furnace	19.50
No. 2 foundry, Chicago furnace	20.00
No. 2 fdy., Granite City fur.	20.00
No. 2 fdy. Cleve. fur. for local del.	19.00
No. 2 plain, del., Phila	21.76 to 22.76
No. 2 plain, Virginia furnace	19.50
No. 2 plain, Buffalo, del. Boston	22.41 to 22.91
No. 2 plain, N. J., tidewater	20.78 to 21.28
No. 2 Alabama, Bir. base	14.50
No. 2 Tenn., Birmingham base	15.00
No. 2 Tenn., del. Cincinnati	18.69
No. 2 Alabama, del. Cincinnati	18.19 to 18.69
No. 2 Alabama, del., Cleveland	20.51 to 21.01
No. 2 Alabama, del., Chicago	20.01 to 21.01
No. 2 Alabama, del. St. Louis	18.92 to 19.42
No. 2 Ala., del. Phila. cons. plants	20.11 to 21.26
No. 2X, east. N. J., tidewater	21.28 to 21.78
No. 2X, eastern, del. Phila.	22.26 to 22.76
No. 2X, foundry, Buffalo furnace	20.00
No. 2X, Buffalo, del. Boston	22.91 to 23.41
No. 2X, Virginia furnace	20.00
Gray forge, Pitts. dist. fur.	18.50
*Gray forge, del. Pittsburgh	19.13 to 19.63
Low phos., standard, valley	27.00
Low phos., standard, Phila.	24.26 to 24.76
Low phos., copper bearing fur.	23.00 to 23.50
Charcoal, Superior, del., Chicago	27.04

*Freight from Pittsburgh district furnace to points in Pittsburgh district 63c, 76c and $1.13 per ton.

CANADIAN PRICES

No. 1 foundry, del. Toronto	$24.60
No. 1, foundry, del. Montreal	26.00
No. 2 foundry, del. Toronto	24.10
No. 2 foundry, del. Montreal	25.50
Malleable, del. Toronto	24.10
Malleable, del. Montreal	25.50
Basic, del. Montreal	24.50
Basic, del. Toronto	24.10

Silvery iron, Jackson county, O., furnaces, in per cents: 5—$23 to $24; 7—$25 to $26; 8—$26 to $27; 9—$27 to $28; 10—$29 to $30; 11—$31 to $32; 12—$33 to $34; 13—$35 to $36.

Bessemer ferrosilicon, Jackson county, O., furnaces, in per cents: 10—$31 to $32; 11—$33 to $34; 12—$35 to $36; 13—$37 to $38; 15—$41.50 to $42.50; 16—$43 to $44.

Cleveland, July 9.—The Fourth of July holiday and also the fact some melters were taking inventory caused pig iron sales to drop sharply in the past week, Cleveland furnace interests booking 10,000 tons, compared with 36,000 tons in the week preceding. The market generally is not as active as in recent weeks, new inquiries being limited. Shipments are slower than the comparable rate in June. Lake furnace prices are unchanged. Cleveland producers continue to quote $18.50, base, for outside shipment and $19 for local consumption.

Cincinnati, July 9.—Sales of northern and southern pig iron have declined, while shipments on contracts are at a satisfactory rate. Alabama iron is easier; other prices are unchanged.

Chicago, July 9.—Sellers of pig iron from local furnaces are holding to $20, base, while some eastern boat iron is available in this market for at least 50 cents less in consideration of the waiving of silicon differentials. A growing disposition among buyers is noted for the closing of requirements for the remainder of the year. A number of smaller tonnage buyers are coming into the market for third quarter.

Current inquiries include 2000 tons of foundry iron for a western Michigan melter, and 500 tons for a Freeport, Ill., foundry. A heavier buying movement is expected after July 15. Southern furnaces are quoting $14.50, base, Birmingham.

Birmingham, Ala., July 9.—Another reduction of 50 cents to $14.50, base, Birmingham, has brought a little impetus in the pig iron market. Furnaces now have orders which will absorb their output for 30 to 60 days. They are hopeful that the proposed reduction in freight rates to the East will be approved. Makers of pressure pipe are active.

Toronto, Ont., July 9.—A majority

(*Concluded on Page* 102)

The Market Section

Coke

Market Is Quiet—Shipments Show Decrease — Connellsville Output Still Near Peak

NEW orders for coke are in lighter volume, many buyers covering only immediate requirements. Midyear inventories in some instances have retarded shipments. Stocks generally are light. Output by merchant ovens in the Connellsville district continues to be reduced, but steady operations at blast furnace and steel plant ovens holds aggregate near peak of year.

Pittsburgh, July 9.—The easier tone in the beehive furnace coke market resulting from lighter demand has not yet been translated into lower prices. Standard furnace coke continues $2.75 to $2.85. Shipments on old orders show further decline from the rate of a month ago, but steady regulation of production is preventing large accumulation of surplus fuel. Current output by merchant ovens is the lowest since January, but heavy operations by blast furnace and steel plant interests holds the total to slightly below the year's peak. Foundry coke is quieter in spot and contract markets, and prices generally are unchanged. Little interest is shown in last half heating coke contracts.

Production of coke in Connellsville region for the week ended June 29 was 101,140 tons, compared with 102,190 tons the preceding week, according to the *Connellsville Courier*.

New York, July 9.—Spot buying of coke continues slack. Shipments are substantial, and prices are firm. Beehive furnace coke is $2.75 to $2.85, base, with foundry $1 a ton higher. By-product foundry coke is holding at $9 to $9.40, delivered Newark, N. J.

Cincinnati, July 9.—Coke specifications for the first week of July have been good, although new business has been confined to small spot orders. Prices on domestic coke for delivery in Cincinnati will be increased 25 cents July 15, while other grades are steady.

St. Louis, July 9.—Closing of certain shops for inventory has been accompanied by requests for delayed shipments of foundry grades. Generally, however, consumer stocks of metallurgical coke are light, and users are willing to take all quotas as due. The rapid spread of the employment of combines in the wheat fields has resulted in the smallest demand for threshing coke experienced in recent years. Prices of all grades are steady.

Birmingham, Ala., July 9.—Demand for coke continues good, and production is steady. The by-product foundry grade continues $5, base, Birmingham.

Coke Prices

Prices per Net Ton

Beehive Ovens	
Connellsville furnace	$2.75 to 2.85
Connellsville foundry	3.75 to 4.85
New River foundry	6.00 to 6.50
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.75
By-Product Foundry	
Newark, N. J., del.	$9.00 to 9.40
Chicago ovens	8.00
New England del.	11.00
St. Louis del.	9.00
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland ,Ky., ovens, Connell. basis	6.50
Portsmouth, O., ov., Connell. basis	6.50
Buffalo ovens	8.75
Detroit, ovens	9.00
Philadelphia, del.	9.00

Ferroalloys

Shipments Reduced Slightly—Spot Market Is Quiet

Pittsburgh, July 9.—Ferroalloy shipments have declined slightly from the rate a month ago although still well in excess of the movement for the corresponding periods of preceding years. Specifications for ferromanganese and spiegeleisen are best maintained, with some special ferroalloys in lighter demand. The spot market for all grades continues quiet. Prices are steady and unchanged, ferromanganese continuing $109.79, delivered, Pittsburgh, spiegeleisen $34, and ferrosilicon $88.50 for 50 per cent material in carload lots.

New York, July 9.—Shipments of ferromanganese are brisk, with the market still $105, duty paid, tidewater. Spiegeleisen continues $34, furnace, for 19 to 21 per cent manganese content, with English spiegeleisen of 26 to 28 per cent largely nominal at $36.50, duty paid, tidewater. One seller of this foreign material is virtually sold up for the remainder of the year. The tungsten market is firmer. New supplies from China appear to be offered more frequently.

Milwaukee Labor Steady

While there was a slight reduction of 253 in the number of men at work in Milwaukee industry during June, the combined payroll is holding up remarkably well, with 43,814 employes in representative shops on July 1, compared with 44,067 as of June 1, and 36,922 on July 1, 1928. The gain over last year is almost 7000. In Milwaukee, the job peaks occur in May and October, with valleys in the employment curve between these periods. This is the usual summer period for declines in labor needs, but the decline so far is only nominal, according to Harry Lippart, chief of the Milwaukee employment bureau.

Bolts, Nuts, Rivets

Specifications Lighter and Buying Only for Current Needs

NUT AND BOLT PRICES, PAGE 98

Pittsburgh, July 9.—Specifications for bolts, nuts and rivets are less active with consumers tending to buy only for immediate requirements. Decline in specifications is general, although railroad equipment builders still are taking fair tonnages. Operations also have declined and now are between 65 and 70 per cent. Contracting for third quarter is completed. The market continues 60 to 70 off for bolts and nuts and 3.10c, Pittsburgh, for large rivets. Prices generally are firm.

Chicago, July 9.—Producers of bolts, nuts and rivets are resuming operations this week at 70 to 75 per cent, following shutdowns for inventory. Accumulated orders indicate shipments this month will be high. Further declines are noted from implement and tractor buyers because of inventory taking. June business was slightly ahead of a year ago. Bolts and nuts are quoted 60 to 70 off list.

New York, July 9.—Demand for bolts and nuts is unusually dull. Producers are operating at about 70 per cent. Prices are unchanged.

Cleveland, July 9.—Lessened demand for nuts and bolts, has resulted in lower operations. The average is 60 to 65 per cent. Rivet demand holds up well, structural steel and various plate fabricating shops being fairly active. Rivet orders are fewer than in April and May. Prices are firm, 70 per cent off applying on nuts and bolts and 3.10c, Cleveland, on rivets.

Ferroalloy Prices

(In dollars, except ferrochrome)

Ferromanganese, 78 to 82 per cent, tidewater, duty paid	$105.00
Ferromanganese, del. Pittsburgh	109.79
Spiegeleisen, 19 to 21 per cent, domestic furnace, spot†	34.00
*Ferrosilicon, 50 per cent, freight allowed, carloads	83.50
*Do, less carload	88.50
Do., 75 per cent	130.00 to 150.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. per lb. con., del.	11.00
Do., for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.35 to 1.45
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producer's plant, net ton	160.00
Do., one ton to carload	170.00
Ferrophosphorus, per ton, carload 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic, per ton, carload, 23-25% f.o.b. Anniston, Ala. (24 per cent)	122.50

†Quantity diff. apply on 100 tons and over.
*These prices contract, spot $5 higher.

Scrap

Strength Maintained in Spite of Summer Dullness—Slight Recessions Largely Local

IN SPITE of backward buying of tonnages and fairly large supply, scrap prices are holding remarkably well. Consumption is at a high rate and at Chicago yards are bare of reserves. Slight declines in price are not significant of general weakness. Dealers find difficulty in covering on some grades.

Chicago, July 9.—While several iron and steel scrap grades have been reduced 50 cents, the market holds several strong factors. Consumption is at an unprecedented rate for the season and shipping orders are unchecked except occasional hold-up orders from consumers without facilities for handling adequately the heavy daily movement. Fresh bookings are light, as buyers are interested largely in immediate requirements. In the week just closed supplies appeared more plentiful, as much scrap was released by western railroads and fabricators contributed more material. Yards are bare of most grades. Dealers are active in filling orders but are less successful in booking tonnages for future shipment. Heavy melting steel is quoted generally at $14.75 to $15.25, the last tonnage sale having been made at $15. A sale of steel angle bars is reported at $17, or 50 cents under recent quotations. Iron car wheels have been reduced 50 cents and machine shop turnings have dropped similarly. Hydraulic compressed sheets are quoted as low as $13. Fairly high prices are being obtained for electric furnace grades and specialties. Some

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	12.00 to 12.50
Boston, dealers	12.00 to 12.25
Boston, No. 2	10.00 to 10.50
Buffalo, No. 1	16.00 to 17.50
Buffalo, No. 2	14.50 to 14.75
Chicago	14.75 to 15.25
Cincinnati, deal.	13.25 to 13.75
Cleveland, No. 1	15.00 to 15.50
Cleveland, No. 2	14.00 to 14.50
Detroit, No. 1 deal.	13.50 to 14.00
Detroit, No. 2 deal.	11.50 to 12.00
East Pa., del. mill	16.50
N. Y., deal. R. R.	12.50 to 13.35
N. Y., deal. yd.	8.25 to 9.25
Pittsburgh, No. 1	18.25 to 18.75
St. Louis, No. 1	14.00 to 14.25
Valleys, No. 1	18.00 to 18.50

COMPRESSED SHEETS

Buffalo (dealers)	14.50 to 14.75
Chicago	13.00 to 13.50
Cleveland	15.00 to 15.50
Detroit, dealers	14.00 to 14.50
E. Pa. new mat.	15.00
Pittsburgh	18.00 to 18.50
Valleys	17.75 to 18.00

BUNDLED SHEETS

Buffalo	12.00 to 12.50
Cincinnati, deal.	10.75 to 11.25
Cleveland	12.50 to 13.00
Eastern Pa.	11.50
Pittsburgh	16.00 to 16.50
St. Louis	10.00 to 10.50

SHEET CLIPPINGS LOOSE

Chicago	8.75 to 9.25
Cincinnati	9.50 to 10.00
Detroit, dealers	8.50 to 9.00
St. Louis	10.00 to 10.50

STEEL RAILS, SHORT

Birmingham	14.00 to 14.50
Boston	10.50 to 11.25
Buffalo	19.00 to 19.25
Chicago (3 feet)	17.50 to 18.00
Chicago, 2 ft. and under	18.00 to 18.50
Cincinnati, deal.	18.50 to 19.00
Detroit, dealers	17.00 to 17.50
Pittsburgh (3 ft.)	20.00 to 21.00
Pittsburgh, 2 ft. and under	20.50 to 21.50
St. Louis	16.50 to 17.00

STOVE PLATE

Birmingham	12.50 to 13.00
Boston consumers	11.50 to 12.00
Buffalo	12.00 to 12.50
Chicago, net	11.50 to 12.00
Cinn., deal., net	9.25 to 9.75
Detroit, net deal.	9.50 to 10.00
Eastern Pa.	11.50 to 12.00
N. Y., deal., mill	8.00 to 8.50
St. Louis	12.50 to 13.00

COUPLERS, SPRINGS

Buffalo	19.00 to 19.25
Chicago	16.50 to 17.00
Eastern Pa.	20.50 to 21.50
Pittsburgh	21.00 to 21.50
St. Louis	14.75 to 15.25

ANGLE BARS—STEEL

Chicago	16.50 to 17.00
St. Louis	13.50 to 14.00

LOW PHOSPHORUS

Buffalo, billets and bloom crops	19.00 to 19.50
Cleve. billet and bloom crops	17.50 to 18.00
Eastern Pa.	21.00 to 22.00
Pitts. billet and bloom crops	22.50 to 23.00
Pitts., sheet bar crops	20.50 to 21.50

FROGS, SWITCHES, GUARDS

Chicago	16.50 to 17.00
St. Louis	15.00 to 15.50

SHOVELING STEEL

Chicago	14.75 to 15.25
Cleveland	11.00 to 11.50
Detroit, dealers	9.00 to 9.50
St. Louis	13.00 to 13.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	10.00 to 11.00
Boston, dealers	11.25 to 12.00
Buffalo, No. 1	13.50 to 14.00
Buffalo, No. 2	16.00 to 16.50
Chicago, No. 1	14.85 to 15.40
Chicago, No. 2	14.75 to 15.25
Cinn., No. 2	13.00 to 13.50
Eastern Pa.	16.00 to 16.50
N. Y., No. 1 deal.	12.00 to 12.50
Pittsburgh, No. 2	18.25 to 18.75
St. Louis, No. 1	13.00 to 13.50
St. Louis, No. 2	13.50 to 14.00

SPECIFICATION PIPE

Boston	9.75 to 10.00
Eastern Pa.	15.50
New York, deal.	10.75

BUSHELING

Buffalo, No. 1	14.50 to 14.75
Chicago, No. 1	13.00 to 13.50
Cinn., No. 1 deal.	11.00 to 11.25
Cinn., No. 2	6.75 to 7.00
Cleveland, No. 1	13.50 to 14.00
Cleveland, No. 2	10.75 to 11.00
Detroit, No. 1 deal.	12.25 to 12.75
St. Louis, No. 1	10.00 to 10.50
Valleys, new No. 1	16.00 to 16.50

MACHINE SHOP TURNINGS

Birmingham	7.00 to 8.00
Boston	6.50 to 6.75
Buffalo	7.25 to 7.75
Chicago	7.50 to 8.00
Cincinnati, deal.	8.50 to 9.00
Cleveland	9.00 to 9.50
Detroit	7.50 to 8.00
Eastern Pa.	11.50
New York, deal.	7.50
Pittsburgh	11.75 to 12.25
St. Louis	8.00 to 8.50
Valleys	11.00 to 11.25

MIXED BORINGS, TURNINGS
For blast furnace use

Boston, dealers	6.00 to 6.25
Buffalo	11.00 to 11.50
Cincinnati, deal.	9.00 to 9.25
Cleveland	10.75 to 11.00
Detroit, dealers	8.75 to 9.25
Eastern Pa.	10.50 to 11.00
New York, deal.	7.00 to 7.25
Pittsburgh	11.75 to 12.25

CAST IRON BORINGS

Birmingham, chem.	13.00 to 13.50
Birmingham, plain	7.00 to 8.00
Boston chem.	10.00 to 10.25
Boston, dealers	6.50 to 6.60
Buffalo	11.00 to 11.50
Chicago	9.75 to 10.25
Cincinnati, deal.	9.00 to 9.25
Cleveland	10.75 to 11.00
Detroit, dealers	8.75 to 9.25
Eastern Pa.	11.00 to 11.50
Eastern Pa., chem.	14.50
New York, deal.	7.00 to 7.25
Pittsburgh	11.75 to 12.25
St. Louis	9.50 to 10.00

PIPE AND FLUES

Cincinnati, deal.	9.00 to 9.50

RAILROAD GRATE BARS

Buffalo	12.25 to 12.75
Chicago, net	11.50 to 12.00
Cincinnati	10.00 to 10.50
Eastern Pa.	12.00
New York, deal.	8.75 to 9.25
St. Louis	12.50 to 13.00

FORGE FLASHINGS

Boston dealers	10.00 to 10.25
Buffalo	13.75 to 14.25
Chicago	10.50 to 11.00
Cleve. over 10 in.	13.25 to 13.50
Detroit	12.00 to 12.50

FORGE SCRAP

Boston, dealers	8.75 to 9.00
Chicago	18.00 to 18.50
Eastern Pa.	14.00

ARCH BARS AND TRANSOMS

Chicago, net	20.50 to 21.00
St. Louis	21.50 to 22.00

Iron, Steel Works Scrap

AXLE TURNINGS

Boston, deal	6.75 to 7.00
Buffalo	14.50 to 15.00
Chicago	13.00 to 13.50
Cleveland	12.50 to 13.00
Eastern Pa.	14.50 to 15.00
Pittsburgh	15.75 to 16.75
St. Louis	10.00 to 10.50

STEEL CAR AXLES

Birmingham	17.00 to 18.00
Boston, ship point	16.50 to 17.00
Buffalo	19.50 to 20.00
Chicago	18.50 to 19.05
Eastern Pa.	23.00 to 23.50
Pittsburgh	21.50 to 22.00
St. Louis	19.00 to 19.50

SHAFTING

Boston, ship point	14.00 to 14.25
Chicago	17.10 to 17.65
Eastern Pa.	19.00 to 20.00
New York, deal.	14.00 to 14.50
St. Louis	18.50 to 19.00

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	11.00 to 12.00
Boston, iron	14.00 to 14.50
Buffalo, iron	14.00 to 14.50
Buffalo, steel	19.00 to 19.25
Chicago, iron	13.50 to 14.00
Chi., rolled steel	18.50 to 19.00
Cincinnati	12.50 to 13.00
Eastern Pa. cast.	16.50
Eastern Pa., rolled	20.50 to 21.50
N. Y., iron, deal	12.00 to 12.50
Pittsburgh, iron	16.25 to 16.75
Pittsburgh, steel	21.00 to 21.50
St. Louis, iron	14.00 to 14.50
St. Louis, steel	17.00 to 17.50

No. 1 CAST SCRAP

Birmingham, cup.	13.00 to 14.00
Buffalo	15.75 to 16.25
Boston, textile	16.00 to 16.50
Chicago, mach.	16.25 to 16.80
Chicago, railroad	15.25 to 15.66
Chicago, agri.	14.65 to 15.20
Cincinnati, Mach. cupolas, gross	19.50 to 20.00
Cleveland, cupola	16.00 to 16.50
Detroit, net, deal.	12.00 to 13.00
East Pa., cupola	17.00
N. Y., cup., deal.	13.00 to 13.50
N. Y., del. local foundries	17.00
Pittsburgh, cupola	15.00 to 16.00
San. Fran., del.	13.50 to 14.00
Seattle	15.00 to 15.25
St. L. No. 1 mach.	15.25 to 15.75
St. Louis, No. 1	14.50 to 15.00

HEAVY CAST

Boston	10.50 to 11.00
Buffalo, breakable	12.75 to 13.25
Cleve., breakable	12.50 to 12.75
Detroit, auto, net dealers	12.00 to 13.00
Detroit, break. deal	9.00 to 9.50
Eastern Pa.	15.00
New York, deal.	10.50 to 11.00
Pittsburgh	12.50 to 13.00

MALLEABLE

Boston, railroad	18.50 to 19.00
Buffalo	18.00 to 18.50
Chicago, agri.	16.00 to 16.50
Chicago, railroad	17.00 to 17.50
Cinn., R. R., deal	15.25 to 15.75
Cinn., agri., deal.	14.25 to 14.75
Cleveland, rail.	17.50 to 18.00
Detroit auto deal.	15.00 to 15.25
St. Louis, rail.	15.00 to 15.50

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	13.00 to 14.00
Rails, scrap, Boston	12.50 to 12.75
Buffalo	16.50 to 17.00
Chicago	17.50 to 18.00
Eastern Pa.	17.00 to 17.50
New York.	12.75 to 13.25
St. Louis	15.50 to 16.00

LOCOMOTIVE TIRES

Chicago, cut	18.50 to 19.00
St. Louis, No. 1	16.00 to 16.50

LOW PHOS. PUNCHINGS

Chicago	16.50 to 17.00
Pittsburgh	20.00 to 21.00

dealers also obtained higher than the recently quoted levels for rail ends in carload lots.

New York, July 9.—Buying by a West Mahwah, N. J. consumer at $10.50, delivered, has resulted in a slight reduction in dealers' buying prices on stove plate for foundry consumption, dealers now offering $8 to $8.50. Fresh consuming buying of other grades has been light. Nevertheless, supplies are rather light, due in a measure to more active buying in recent weeks for shipment by water to Buffalo and for export to Japan. No. 1 railroad steel for export went at $12 a ton, alongside ship.

Philadelphia, July 9.—Iron and steel scrap is quiet and unchanged, with consumers and dealers awaiting further developments.

Buffalo, July 9.—No new tonnage buying of No. 1 heavy melting steel is reported, but dealers say firmer markets elsewhere will mean a Buffalo price of $17.50 when purchasing is resumed. Large consumers have indicated they will accept shipments of No. 1 cast and stove plate after July 15, and may buy additional tonnage then. Prices are nominal in view of suspension of buying.

Youngstown, O., July 9.—Shipments of most grades of iron and steel scrap are in generally satisfactory volume. While some large users of steel grades have accumulated fair-sized stocks, they are taking other grades. In fact, despite rumors of tapering off in some finished steel production need for tonnage output of ingots appears as pressing as ever with all the important mills in this valley. Hence, it is not surprising that steel grades show a tendency to rise as much as 50 to 75 cents a ton.

Cleveland, July 9.—The iron and steel scrap market is showing little activity. The leading consumer is taking only light shipments by water. Others are receiving regular consignments. Dealers in general are maintaining a standoff position and are showing little disposition to pile up yard stocks. Prices are firm and unchanged with No. 1 steel at $15 to $15.50 and No. 2 at $1 less. Steel grades are stronger at Youngstown with No. 1 steel at $18 to $18.50. Compressed sheets have advanced to $17.75 to $18. Shipments are fair.

Detroit, July 9.—Regulation and holdup orders on shipments obscure the market somewhat for iron and steel scrap but the market seems to have a strong foundation. Turnings and heavy melting steel are bringing a higher price than a month ago.

Cincinnati, July 9.—With dealers experiencing difficulty in obtaining heavy melting steel, prices have been increased 25 cents a ton. This change, with continued steadiness of prices on other grades, has brought a better feeling.

St. Louis, July 9.—Typical summer conditions prevail in the iron and steel scrap market. New purchasing is restricted by temporary closing of some plants, vacations and lack of grades of material desired. Consumer stocks are mixed, some concerns being well supplied, while others

Canadian Scrap

Dealers' Buying Prices

MONTREAL
Per Gross Ton

Iron axles	$22.00
Steel axles	20.00
Car wheels	16.00
Stove plate	13.00
Wrought pipe	6.00
Turnings	6.50
Heavy melting steel	8.00

TORONTO

Steel axles	15.00
Iron axles	17.00
Heavy melting steel	9.50
Turnings	7.50
No. 1 mach. cast (net)	16.00
Malleable (net)	12.50

are in actual need. Some mills have been placing numerous orders for fill in purposes, but are unwilling to purchase real tonnage at present levels.

Pittsburgh, July 9.—Iron and steel scrap is in a strong market, especially the steelmaking grades. The better grades of this are in demand and bringing higher prices. Monthly Pennsylvania list brought up to $19.25 for heavy melting steel, and some sales at this figure are reported. For ordinary melting steel dealers are finding little demand, though inability to pick up tonnage under $18 is a source of strength, and 18.25 is more representative. Specialties are strong and in demand.

Birmingham, Ala., July 9.—The scrap market is sluggish, though several orders are reported every week. Heavy melting steel is moving steadily with open-hearth furnaces in active operation. Old rails are also in demand.

Toronto, Ont., July 9.—The summer holiday lull has set in and business in the Canadian iron and steel scrap markets has fallen into a general slump. Demand for steel scrap is negligible. Iron grades hold a fairly good position, with small sales. Prices are unchanged.

Semifinished Steel

Contracting Is Not Active—Litt'e Available for Open Market

SEMIFINISHED STEEL PRICES, PAGE 98

Pittsburgh, July 9.—Although some third quarter contracts for sheet bars have been written, transactions in rerolling billets and slabs are not numerous. Sheet bars appear established at $35, some second quarter contracts being extended at that figure. Contracting in billets and slabs has not been heard of at less than $35, which represents an advance of $1 a ton over the second quarter price. Forging billets are firm at a $40 minimum. Second quarter contracts for all grades were well specified and producers have little, if any, tonnage available for the open market. Wire rods continue firm at $42.

Youngstown, O., July 9.—Previously signed contracts for billets, sheet bars and slabs for third quarter delivery are being revised in line with the prevailing quotation of $35, Pittsburgh and Youngstown. The movement of semifinished materials to consumers is up to normal summer requirements.

Cleveland, July 9.—The leading merchant producer of sheet bars, billets and slabs now has its entire output for third quarter under contract to its regular customers, and continues operating at full capacity. The price reported applying on all this business for third quarter is $35, Cleveland or Youngstown, for sheet bars, billets and slabs. The holidays enabled the producer to catch up slightly on shipments, and its open hearths now are scheduled three weeks ahead.

Chicago, July 9.—Despite semifinished prices of $35, base, in the East, Chicago district producers are maintaining nominal quotations at $37, base Chicago, for rerolling or commercial billets and sheet bars. The base price of forging billets is nominal at $42. The nominal quotations reflect inability of producers to sell in the open market because of requirements of their own finishing mills.

Pig Iron

(*Concluded from Page 99*)

of melters who place pig iron contracts have signed up to the end of September. Spot demand is fairly steady. Prices are unchanged.

Philadelphia, July 9.—Pig iron demand is more active. The National Radiator Co. continues to negotiate for 3500 tons for Trenton, N. J., while Baldwin Locomotive Works is inquiring for 1000 to 1500 tons of low silicon iron. The navy department wants about 500 tons of foundry iron and 100 tons of low phosphorus iron for various yards. The York Ice Machinery Corp., York, Pa., bought about 1000 tons, and several other round tonnages were closed during the week. Eastern Pennsylvania foundry iron is easier, ranging from $21 to $21.50, base, furnace. Sales of Birmingham iron continue to be made at $15, base, Birmingham, but in certain instances $14.50 is done. Transportation agencies have advised sellers of southern iron here that the proposed lower rates to northern points will become effective Aug. 1. The reduced rates apply to iron consignments shipped by rail to Savannah and picked up there and taken by water to northern points. The new combination rail and water rates from Birmingham are $5.75 to Boston and Providence, $5.45 to New York, $5.25 to Philadelphia, and $5 to Baltimore. Several thousand tons of southern foundry iron already have been sold in the general Philadelphia territory for shipment after the end of July.

Durham Duplex Razor Co. recently booked an order for 300,000,000 razor blades of special design, requiring 1000 tons of steel.

Bars

Backlogs Being Slowly Cut but Deliveries Still Are Deferred—Buying Is Heavy

SUMMER decline in demand has allowed mills to reduce backlogs to some extent, though at Chicago eight to ten weeks prevail and at Pittsburgh two to four weeks. Western consumers have bought heavier for third quarter than for second. Records are being set for postwar years in tonnage. Prices are unchanged and holding firmly.

BAR PRICES, PAGE 97

Chicago, July 9.—Slower activity in automotive and implement production is cutting into bar mill specifications. On the other hand, contract and spot sales have reached the highest point in months. One producer reports sales of bars and other heavy finished material in the week just closed made the highest weekly total this year. This was due to the placing of much third quarter contract tonnage on finishing mill books. Third quarter contracting is nearly completed and a number of finished steel buyers are reported to have obligated themselves heavier for third quarter than for second. It is indicated third quarter sales are the heaviest since war years. Implement activity is cut down largely by inventory taking. More relief is obtained in deliveries of certain sizes and sections, with more frequent gaps in rolling schedules for the accommodation of emergency tonnage, but the maximum backlogs of actual specifications in bars remain at eight to ten weeks, as against 12 to 14 weeks last month. Mills are scheduling tonnage on September rollings. Virtually no suspensions have been reported for July. Buyers are looking more to the future in anticipating specifications, but are showing no tendency to change policies in accumulating stocks.

The price of 2.05c, Chicago, is used as the base for soft steel bar bookings, while the 2.15c quotation is nominal.

New York, July 9.—Steel bar market continues exceedingly firm, with 1.95c out of the question except on tonnage lots. Leading sellers assert there is no lessening in demand as compared with a month ago.

Pittsburgh, July 9.—Hot-rolled merchant bar demand is slackening further, coincident with tapering in automotive operations and decline in requirements of cold bar finishers. Specifications still are in excellent volume for July but are smaller than in preceding months. Backlogs are being worked off slowly, however, and unfilled business still represents two to four weeks' work, depending upon sections. On average sizes, shipments are deferred no more than two weeks. Producers report a firm price situation, with 1.95c, Pittsburgh, well maintained on all new business.

Cleveland, July 9.—Merchant steel bar specifications are slackening. July tonnage is 10 to 25 per cent lower than June. Cold bar finishers are paring their specifications and other users, particularly automotive, also note a recession. Outside mills expect customers to get busy by Sept. 1 and believe they will note increased tonnage in August or late July, making for a shorter summer lull than usual.

Philadelphia, July 9.—Steel bar specifications are good although not as brisk, comparatively, as plate and shape specifications.

Approve Pig Iron Rates

New York, July 9.—Public service commission of New York has approved new freight rates on pig iron on the Delaware & Hudson railroad. The new rates, effective July 24, are $3.53 per gross ton on carloads from Standish to the following New York Central stations: Auburn, Caledonia, Canandaigua, East Rochester, Geneva, Leroy, Phelps, Seneca Falls and Shortville.

The pig iron industry is interested in a bill in the New York legislature calling for an expenditure of $50,000,000 for deeping the state barge canal.

Alabama-By-Products Corp., Birmingham, Ala., is manufacturing 210,000 gallons of benzol monthly and has contracted with German, French and English consumers for one half this amount for use in motor fuel making.

Plates

Orders Continue Heavy—Chicago Mills Booked Eight to Ten Weeks for Capacity Operations

PLATE orders are well sustained. Tonnage booked in Chicago in the past week for the third quarter was the largest for any week in many months. The mills there continue operating at capacity, with prospects for this rate for eight to ten weeks. Substantial business is anticipated as a result of electric welded pipe line orders placed recently.

PLATE PRICES, PAGE 97

Chicago, July 9.—New plate tonnage is scheduled to appear on mill books in the next 30 to 60 days as a result of the electric welded pipe line orders recently placed. It is understood that organization has been completed for the building of a natural gas line from the Texas Panhandle field to Chicago by the Texas Corp., Phillips Petroleum Corp., Skelly Oil Co., and Columbian Carbon Co. Oil tank work is moderately active. One plate producer took 3900 tons for refinery work in Texas. A Chicago district producer is scheduled to ship 700 tons daily on oil tank obligations through September. An inquiry for about 750 tons for refinery work has appeared in the San Francisco district, and estimates are that 10,000 tons of prospective tank projects are in the form of actual inquiry or are taking shape. Plate mill operations are at capacity and this rate is indicated for eight to ten weeks. Small tank and boiler makers and general manufacturing lines are heavy consumers. Third quarter tonnage booked in the past week was the heaviest in many months. Specifications are holding up to the average weekly totals of this year. The 2.05c, Chicago, quotation is the base for contract and spot sales.

New York, July 9.—Plate buying is easier, but mills are in good position. Prices are steady at 1.95c to 2.05c, base, Pittsburgh, or 2.05c to 2.15c, base, Coatesville. The Riter-Conley Co. has begun the erection of 18 tanks for Gulf Refining Co., Staten Island, requiring an aggregate of 5400 tons. Contract has been awarded for two surge tanks for the Saluda development, North Carolina, to Chicago Bridge & Iron Works, requiring 1300 tons of plates.

Philadelphia, July 9.—Plate demand is heavy and eastern mills continue to accumulate orders as Pittsburgh makers are unable to promise delivery much before four to six weeks. The eastern mills are unable to ship before four weeks, in some instances.

It is expected that four boats for the Export Steamship Corp. will actually be awarded within the coming week to the New York Shipbuilding Corp. They involve 5200 tons of steel.

Pittsburgh, July 9.—Plates have lost little of the activity that characterized June. Specifications continue in good volume for line pipe, freight

cars and river barges. Inland Waterways Corp. is understood to be planning to purchase 18 steel barges and two steamboats. The barges, which are to be of the same type as the 40 recently placed, will require more than 10,000 tons of plates and shapes. Several small barge orders are pending.

Cleveland, July 9.—Plate demand from miscellaneous sources keeps up surprisingly well in moderate tonnages. Plates have not yet been awarded for the 25 locomotives placed by the Pittsburgh & Lake Erie at Lima, O. A large plate tonnage will be bought when 25 locomotives are awarded by the Wabash. The open market figure on plates is 1.95c, Pittsburgh.

CONTRACTS PLACED

1300 tons, two surge tanks, Saluda development, North Carolina, to Chicago Bridge & Iron Works.
5000 tons, Vancouver, B. C., water pipe extension, to Vancouver Engineering Works, Ltd.
450 tons, Seattle water pipe extension, to Seattle Boiler Works.
200 tons, municipal ferryboat, New York, to Bethlehem Steel Co.
150 tons, Weyerhaeuser, Timber Co.'s new plant, Klamath Falls, Oreg., to Seattle Boiler Works.
126 tons, Vale, Oreg., siphon project, to Western Pipe & Steel Co.

CONTRACTS PENDING

3000 to 4500 tons, 36 to 48-inch steel pipe for West Hartford, Conn. Bids opened July 17. Concrete is possible alternate.
2500 tons, water pipe extension, Seattle; bids July 19.
800 tons, penstock, Philippine islands, bids being taken by Charles B. Halley, engineer, Washington.
165 tons, two steel hull whirler derrick boats for U. S. Engineers, Memphis district. Dravo Contracting Co. low bidder.
Unstated tonnage, standpipe, Vera Cruz, N. M.
Unstated tonnage, standpipe, Colombia, South America.

Board for "Reasonable" Merchant Marine

National Industrial Conference board of New York in a study "The American Merchant Marine Problem," declares that while an adequate merchant marine is of paramount importance to national security and development of American foreign commerce, nevertheless the present financial and economic position of the United States and of the world's shipping industries makes questionable the adoption of any policy which would encourage the development of an American merchant marine larger than that required for national defense and for foreign trade and which would unreasonably lessen the use of foreign shipping services.

Tungsten ore concentrates to the extent of nearly 1000 tons are at Kanchow, China, awaiting transport to Shanghai for export. Low water in canals prevents shipment. Of this stock 300 tons are covered by sales contracts.

Pipe

150,000-Ton Line Up Soon—Four Large Cast Lots Placed—Prices Hold Steady

INSTALLATION of a pipe line from Texas to Chicago will furnish largest inquiry in several months—150,000 tons. Buttweld demand is well sustained. Cast pipe awards involve two for Los Angeles, 2573 tons and two for New York state, 1200 and 1800 tons, respectively. Despite keen competition, cast pipe prices hold. Private buying is fair while municipal purchases lag.

PIPE PRICES, PAGE 98

Chicago, July 9.—Water pipe sales comprise chiefly private orders from Chicago, Milwaukee and Detroit districts. Little tonnage appears in fresh municipal work. Bids for the Hinsdale, Ill., sewage treatment works will be received July 29. A small amount of water pipe will be purchased in the Peoria, Ill., sewage treatment propect. Kimberly and Beaver Dam, Wis., closed on tonnages of water and sewage pipe. Carload prices continue steady at $45.20 to $46.20, delivered Chicago, for 6 to 24-inch water pipe.

Boston, July 9.—While private business is active in cast pipe, municipal lettings are light. West Hartford, Conn., opens bids July 17 on 4500 t of 36 to 42-inch pipe. Prices are a shade easier, 4-inch being quoted at $46.10 to $47.10; 6 to 12-inch at $40.10 to $41.10 and 16-inch and up at $39.10.

New York, July 9.—Keen competition for municipal business brings out low bids. Yonkers, N. Y., placed 1800 tons at the reported figure of $35.80 delivered for 12 to 18-inch pipe. The next highest bid was $37. R. D. Wood & Co. was awarded 1200 tons, 3 to 12-inch, for the Rockland county, N. Y., state hospital. Private buying remains fair and a good volume remains to be placed by New York city departments. A Brooklyn project calls for a considerable tonnage of steel pipe.

Pittsburgh, July 9.—Another large line pipe project is pending and is expected to be placed soon. Bids are being taken for a line to be laid from the Panhandle gas fields in Texas, to Chicago. The Texas Co., Skelly Oil Co., Phillips Petroleum Corp. and Columbian Carbon Co. are understood to be affiliated in this project. Bids are asked on pipe up to 24-inch diameter. Mills already have good backlogs in large sizes of lapwelded pipe. Other lines are being discussed although few approach the point of letting. Demand for merchant pipe shows but little change. Tonnage moving to the oil country is holding about equal to or slightly better than the rate a month ago. Mechanical tubing continues active although in lighter demand from the automotive field. Locomotive and boiler tubing maintain most of their recent activity.

Youngstown, O., July 9.—Steady accumulation of both butt and lapwelded pipe orders resulted in unusually brisk operations for the summer season. Continued demand for buttwelded pipe indicates that building construction throughout the country holds up satisfactorily. More line pipe orders are being booked, not so much in spectacularly large lots as in the steady inflow of smaller tonnages. Both welded and seamless tube mills accordingly are booked to insure a 65 per cent rate of operation well into August.

Cleveland, July 9.—Although demand for buttweld pipe is slower than in June, orders for small amounts are fairly numerous from week to week, from both jobbers and users direct. Mills all have good backlogs and enjoy at least a 65 per cent operating rate. The 300 tons for Cleveland's street lighting department is to be ordered on July 12.

Birmingham, Ala., July 9.—Recent lettings for cast iron pressure pipe have been fully up to expectations. All shops are actively producing and shipping. In practically all shops some night work has to be done to prepare for day operations. What little yard stock has accumulated is now being made ready for shipment. Soil pipe lags.

CONTRACTS PLACED

1800 tons, 12 to 18-inch class C cast pipe, to United States Pipe & Foundry Co.
1425 tons, 8-inch class B, Los Angeles, to American Cast Iron Pipe Co.
1200 tons, 3 to 12-inch, state hospital, Rockland county, New York, to R. D. Wood & Co.
1148 tons, 24-inch class C, Los Angeles, to American Cast Iron Pipe Co.
400 to 500 tons, water and sewage pipe for Beaver Dam, Wis., awarded through contractor.
225 tons, West Dravis street project, Seattle, to American Cast Iron Pipe Co.
225 tons, Westlake avenue, North, Project, Seattle, to French makers, through G. Arne Argentieri, general contractor.
208 tons, 4-inch class C, improvement Coldwater Canyon road, Los Angeles, to B. W. Kuhn Co.
100 tons, 6 and 8-inch for Salem, Mass., to United States Pipe & Foundry Co.
Unstated tonnage, sewage and water pipe for Kimberly, Wis., awarded through contractor

CONTRACTS PENDING

4500 tons, 36 to 42-inch, West Hartford, Conn. Bids to be opened July 17.
3200 lineal feet of 24-inch cast pipe for West

Allis, Wis., water main. Bids opened July 9.
724 tons, 4 to 12-inch class B, improvement on Lido Island, Newport Beach, Cal. Bids July 15.
300 tons, water and sewage pipe for Hinsdale, Ill., sewage disposal plant. Bids July 29.
260 tons, 12-inch, East Bay municipal utility district, Oakland, Calif. United States Pipe & Foundry Co. low bidder.
199 tons, 4 to 10-inch class C, improvement of Avalon street, San Diego, Cal. Bids opened.
162 tons, 6 and 8-inch class B, Great Falls, Mont. Bids July 8.
115 tons, 3-inch and up, Wessaic, N. Y.
Unstated tonnage, 42 and 48-inch, Hartford, Conn. Bids open July 17.

STEEL PIPE

150,000 tons, line from Panhandle, Tex., gas fields to Chicago. Bids to be asked soon.
300 tons, city of Cleveland. Order to be placed July 12.

Tin Plate

Shipments Catch Up With Orders—Second Half To Be Active

TIN PLATE PRICES, PAGE 98

Pittsburgh, July 9.—Tin plate producers report a continued steady run of specifications, with shipments seasonally heavy. There is little pressure for delivery, however, as most mills are well abreast of their orders. Outlook for tin plate requirements of large canmakers indicates that the second half will be sufficiently active to bring the total 12 months up to a comparable level with preceding years. Operations were reduced the past week by the holiday, with the shutdown extended in most cases over the remainder of the week. Schedules again have been stepped up and the average for the district is slightly higher, at 90 to 95 per cent.

Philadelphia, July 9.—Tin plate for shipment from stock has increased in price. It now is bringing from $4.50 to $4.60 per 100-pound base box, Pittsburgh.

Releases Data Sheets on Chromium in Steel

A recent release by the recommended practice committee of the American Society for Steel Treating deals with "Chromium as an Alloying Element in Steel." The information was compiled by M. A. Grossmann, research metallurgist, Central Alloy Steel Co., Massillon, O. Specifications are given for automotive steels; chromium nickel steels; chromium-vanadium, chromium-molybdenum and chromium-silico-manganese steels; ball bearing steels stainless steels and alloys; air-hardening or self-hardening steels; high-speed steels; and magnet steels. The source and nature of metallic chromium are discussed.

Two new standards set up by the American Standards association, namely, American tentative standard for aeronautical symbols and American standard for letter symbols for electrical quantities, are available at 35 cents and 20 cents, respectively. They may also be had for loan by anyone wishing to review them. Inquiry should be addressed to the association at 29 West Thirty-ninth street, New York.

Sheets

Market Active Again After Holidays—Full Operations Indicated for Pittsburgh District

SHEET demand has resumed actively after the holidays. Business was interfered with temporarily as Pittsburgh and valley mills closed during the last three days of the week, so the position has not been altered, makers carrying heavy backlogs. Specifications show little decrease from the June rate. Competition for galvanized is sharper in the Middle West.

SHEET PRICES, PAGE 97

Pittsburgh, July 9.—Sheet mills have stepped up operations following an almost complete shutdown during the latter part of last week. Incoming business was interfered with by the holiday, so producers are in an unchanged position as regards unfilled orders. Specifications so far this month have shown little change from the active June rate, and the period at which operations will taper off is further deferred. Unfilled orders extend as far as seven weeks on blue annealed sheets, with deliveries on other grades extending down to four weeks. Galvanized sheet backlogs for some mills represent six weeks' work and demand for automobile sheets has been sufficiently well sustained to hold up backlogs on this material. Practically all mills are in a satisfactory position as regards supplies of semifinished steel and full operations are in sight for the remainder of this month. The current rate is around 95 per cent. Prices hold to their former levels, with the black sheet market generally 2.85c and galvanized 3.60c, although no small tonnage of the latter is bringing 3.70c. Blue annealed is firm at 2.35c and automobile sheets continue 4.10c.

New York, July 9.—Galvanized sheets are easier, black fairly steady, and blue annealed firm. On this latter some of the larger eastern mills are booked into early fall. No. 10 blue annealed plates hold at 2.20c, Pittsburgh, and No. 13 sheets 2.35c. Galvanized sheets are 3.50c to 3.60c, Pittsburgh, with the lower figure applying only to preferential business. Black sheets are 2.85c to 2.95c, Pittsburgh.

Youngstown, O., July 9.—Sheet mills throughout this district resumed operating Sunday night and Monday morning at the high rates that prevailed prior to the Fourth of July. With the resumption of the Liberty works of Republic Iron & Steel Co. at Leavittsburg, after five weeks' idleness, all sheet plants in the valleys again are working near capacity. Makers of full-finished autobody sheets appear in the best position as to bookings and new business. Demand for blue annealed sheets is keeping up surprisingly well in the summer months, mills being obligated two to four weeks ahead. Little effort is being made here to take galvanized sheet orders, as local makers find the keen competition from other producing districts is keeping down the price of that grade. Autobody sheets hold at 4.10c, Pittsburgh, common black at 2.85c to 2.95c, blue annealed at 2.35c for No. 13 gage, and galvanized at 3.60c to 3.70c.

Cleveland, July 9.—Sheet backlogs gradually are diminishing. Some mills have enough for four to six weeks; some name late August on various grades and one producer is filled until October. A few have open rollings two weeks hence. Demand from many automobile makers has receded, although parts makers for Ford and Chevrolet continue to demand steel at almost an uninterrupted rate. Miscellaneous demand holds up well. Price deflections appear to be confined to black and galvanized. Larger mills maintain full market quotations.

Chicago, July 9.—Sharp competition in galvanized and roofing sheets has resulted in concessions, but producers say the weakness has been localized and prices here thus far have been unaffected. Several buyers still have third quarter tonnage to place. Backlogs on galvanized are four to six weeks, and black sheet deliveries are deferred six to eight weeks. Sheet mill operations, held down by allotments of semifinished steel, are about 75 to 80 per cent for the district. One producer again is maintaining a five-day operating schedule. Chicago district mill prices are 3.05c for No. 24 black, 3.80c for No. 24 galvanized, 2.45c for No. 13 blue annealed sheets, and 2.30c for blue annealed plates. Delivered quotations are $1 higher.

St. Louis, June 9.—Sheet specifications continue in good volume, and the general tone of the market is satisfactory from the seller's viewpoint. Demand for galvanized has improved slightly. Prices are steady.

Form Metalware Group

Manufacturers of stove pipe, elbows and drip pans have formed the Metalware Institute Inc., 342 Madison avenue, New York. Some of the objects of the group are to establish interchange of credit, establish a bureau of statistics, co-operate with the division of simplified practice of the department of commerce to eliminate unnecessary styles and sizes, interest the industry in cost systems, and consider general matters for the good of the industry.

Structural Shapes

Large Awards Still Sustain Weekly Aggregate—6000-Ton Apartment Up in East —Prices Are Less Firm in Some Sections

LETTINGS in the 1000 to 4000-ton range are still sufficiently numerous to maintain structural awards at a high weekly aggregate. An office building let at Harrisburg, Pa., takes 3300; a telephone building at New York, 4000 tons, also was awarded as was a building at Peoria, Ill., 3000 tons, one at Flint, Mich., 2400 tons, and a bridge roadway at New York, 2000 tons. New inquiries just out involve 6000 tons for an apartment in New York, a bank building there 2500 tons, an office building at Milwaukee 2500 tons, and a viaduct at St. Paul 1300 tons. A 15,000-ton bridge near Pittsburgh is scheduled for figuring this fall. Open market prices based on 1.95c, Pittsburgh are observed on small quantities, with lower figures applying on larger amounts.

STRUCTURAL SHAPE PRICES, PAGE 97

New York, July 9.—Active projects involve close to 25,000 tons. This includes subway work calling for more than 10,000 tons. The new West Side city improvement program will also take a large steel tonnage, but early action is not expected. While demand for building steel remains seasonally high, some recession is noted from the recent high rate of operations. The state office building at Harrisburg, Pa., requires 3300 tons, awarded McClintic-Marshall Co. Hedden Iron Construction Co. was awarded 4000 tons for a new telephone building. The largest new inquiry calls for 6000 tons for an apartment on West Fifty-ninth street.

The New York Structural Steel board of trade, announces structural awards, for June in the metropolitan district, exclusive of bridges, piers and subways, aggregated 46,899 tons, as compared with May awards of 34,575 tons. Awards the first six months this year were 243,285 tons. In June of last year, they totaled 38,600 tons.

Boston, July 9.—Awards totaled only about 500 tons this past week. Heavier tonnages are pending, including a 3000-ton office building for E. H. Rollins & Son. Other buildings up for bids, take 250 to 400 tons each. A theater at Salem, Mass., 300 tons went to New England Structural Co.

Worcester, Mass., July 9.—Structural demand is light. An award of 700 tons for an addition to State Mutual building went to Eastern Bridge & Structural Co. This closes the larger lists until fall.

Philadelphia, July 9.—Shape demand has increased. Eastern mills again are accumulating backlogs so that consumers once more are having difficulty in obtaining desired deliveries. This situation creates a firmer price tendency and on new business 2.00c, base, nearest mill, is now the usual price, whereas 1.90c and 2.00c were being done freely. Heavy structural lettings and numerous new inquiries promise to continue heavy shape business. New jobs put out for bids here this past week aggregate 25,000 to 30,000 tons. Numerous other jobs are projected. Fabricators report a somewhat improved condition with respect to prices on fabricated work.

Pittsburgh, July 9.—Inquiry for structural steel is more active although the majority of projects are small. One large job in prospect, the McKees Rocks, Pa., bridge, will require about 15,000 tons. Bids are not yet asked and award is not expected until fall. Recent lettings require less than 100 tons each. Specifications for plain material hold well to the June rate although slightly below the peak of the year. Prices of fabricated material still are under pressure, with plain shapes 1.90c to 1.95c, Pittsburgh.

Cleveland, July 9.—Small structural awards and small inquiries continue uninterrupted, affording some fabricators practically 100 per cent operations. Action still is deferred on the larger work. Bids are to be asked this week on the jail-courts building here, 1500 tons. Delays are arising in connection with civic work such as lake front stadium, Main street bridge, Central-Lorain viaduct, etc., requiring in all 20,000 to 25,000 tons. Plain material is sold in small quantities at 1.95c, Pittsburgh. Mills report specifications keep coming in at a good pace.

Chicago, July 9.—Specifications against building work from structural steel fabricating shops, and the necessity for alloting semifinished steel to finishing mills, still hold structural mill backlogs to 8 to 10 weeks. Car specifications account for a fair portion of the tonnage. Inland Steel Co. awarded 600 tons for a works office building and has 2000 to 2500 tons to place for mill extension work. Several thousand tons each have come out in inquiry from Chicago and Milwaukee districts. Work is scheduled to start before the end of the year on the 38-story building for the Garrett Biblical institute. The 1000-ton garage project in the Chicago loop has been postponed indefinitely. The 2.15c, Chicago, quotation for plain structural material is maintained only for miscellaneous mixed carload orders.

A building permit was taken out today for a 60-story office building at Michigan avenue and Randolph street, Chicago. It is understood that work is to be started shortly. The structure is to be built by John F. Cuneo, president of Cuneo Press Inc., and O. W. Rosenthall. The Cornell Co. is general contractor.

Awards Compared

	Tons
Awards this week	30,619
Awards last week	39,844
Awards two weeks ago	27,378
Awards this week in 1928	59,554
Average weekly awards, 1928	39,082
Average weekly awards, 1929	42,285
Average weekly awards, June	49,094
Total awards to date, 1928	1,075,849
Total awards to date, 1929	1,183,966

CONTRACTS PLACED

4300 tons, building, Ohio Savings & Trust Co., Toledo, O., to American Bridge Co.; reported last week as 4000 tons.

4000 tons, telephone building, East Fiftieth street, New York, to Hedden Iron Construction Co.

3300 tons, state office building, Harrisburg, Pa., to McClintic-Marshall Co.

3000 tons, Cedar street bridge, Peoria, Ill., to McClintic-Marshall Co.

2400 tons, freight loading equipment, Chevrolet Motor Co., Flint, Mich., to Whitehead & Kales Co.

2000 tons, Queensboro bridge roadway, New York, to American Bridge Co.

1250 tons, First Mechanics' National bank, Trenton, N. J., to Belmont Iron Works.

1000 tons, power house, Bridgeport, Conn., to Levering & Garrigues Co.

825 tons, addition, Chevrolet Motor Co., Flint, Mich., to R. C. Mahon Co.

815 tons, school, No. 209, New York, to Bethlehem Fabricators Inc.

800 tons, Blackstone Gift shop, Chicago, to McClintic-Marshall Co.

800 tons, school, Grand Rapids, Mich., to Russel Steel Construction Co.

700 tons, addition, State Mutual building, Worcester, Mass., to Eastern Bridge & Structural Co.

674 tons, school, No. 100, New York, to Bethlehem Fabricators Inc.

600 tons, works office building, Inland Steel Co., Indiana Harbor, Ind., to Vanderkloot Steel Works.

600 tons, building for Automotive Specialty Co., Muncie, Ind., to Indiana Bridge Co.

600 tons, exhibit building, Pomona, Cal., to McClintic-Marshall Co.

550 tons, girder spans for Chicago, Milwaukee, St. Paul & Pacific railroad, to American Bridge Co.

500 tons, hospital, Department of Public Works, Regina, Weyburn, Sask., to Dominion Bridge Co.

500 tons, addition, trainshed, Union Pacific, Omaha, Nebr., to Milwaukee Bridge Co.

500 tons, four Pennsylvania railroad bridges, to McClintic-Marshall Co.

450 tons, building, Edward Ford Plate Glass Co., Toledo, O., to McClintic-Marshall Co.

350 tons, state highway bridge, Lucerne county, Pa., to Anthracite Bridge Co.

350 tons, store building, S. H. Kress Co., Montgomery, Ala., to Ingalls Iron Works.

300 tons, hospital, Eureka, Cal., to Moore Drydock Co.

300 tons, theater, Salem, Mass., to New England Structural Co.

260 tons, bridge, Pere Marquette railroad, Flint, Mich., to American Bridge Co.

250 tons, state highway bridge at Escanaba, Mich., to McClintic-Marshall Co.

250 tons, equipment for Hines Lumber Co., Oregon, to Poole & McGonigle.

250 tons, power house, Nebraska Power Co., Omaha, Nebr., through Phoenix Utilities Co., to Paxton & Vierling Iron Works.

250 tons, pent house and alterations to Continental-Illinois Bank building, Chicago, to American Bridge Co.

200 tons, girder spans, Union Pacific, to American Bridge Co.

200 tons, girder spans, Chicago, Burlington & Quincy, to American Bridge Co.

200 tons, garage, Allentown, Pa., to Lehigh Structural Steel Co.

150 tons, plant at Walpole, Mass, to New England Structural Co.

150 tons, horticultural building, Ontario Agricultural college, Guelph, Ont., to London Structural Steel Co.

150 tons, highway bridges, Winston county, Ala., to Virginia Bridge & Iron Co.

125 tons, piers A and B, Long Beach, Cal., to unstated fabricator.

120 tons, plant, Cadet Knitting Mills, Columbia, Tenn., to Virginia Bridge & Iron Co.

100 tons, girder spans, Chicago, Rock Island & Pacific, to McClintic-Marshall Co.

100 tons, New Hampshire state bridge, to unstated fabricator.

100 tons, shop addition, James Hunger Machine Co., North Adams, Mass., to Haarmann Steel Co.

100 tons, bank building, Butler, Pa., to Guibert Steel Co.

100 tons, bank building, Leechburg, Pa., to Guibert Steel Co.

100 tons school building, Lockport, N. Y., to Kellogg Structural Steel Co.

100 tons, building, Mersey Power Co., Liverpool, N. S., to Dominion Bridge Co.

CONTRACTS PENDING

14,000 tons, two Pennsylvania railroad bridges across Hackensack river, N. J. Bids being taken.

6000 tons, apartment, West Fifty-ninth street, New York.

4000 tons, telephone building, Eighteenth street, New York.

3000 tons, first section Ridge Avenue subway, Philadelphia. Bids opened July 19.

3000 tons, office building, E. H. Rollins & Sons, Federal and Franklin streets, Boston.

2500 tons, building, County Trust Co., Eighth avenue, New York.

2500 tons, office building, Milwaukee Electric Railway & Light Co., Milwaukee.

1500 tons, jail-courts 10-story building, Cleveland. Architects' plans approved by jail body. County Commissioner J. R. Zmunt states bids to be asked late this week.

1375 tons, West Garfield street bridge, Seattle. Bids Aug. 2.

1300 tons, viaduct, St. Paul.

1000 tons, garage, Plymouth court, Chicago; indefinitely postponed.

1000 tons, building, Seventeenth and Samson streets, Philadelphia. General contract to the Wark Co.

800 tons, Temple university school of medicine, Philadelphia. General contract to the Wark Co.

800 tons, schools, Nos. 135 and 154, Queens, N. Y.

700 tons, building, Trustee System Service Co., Chicago. General contract to McClennan Construction Co.

600 to 700 tons, power plant, Dayton Power & Light Co., Dayton, O. Bids in.

500 tons, building, Edison Electric Appliance Co., Chicago.

450 tons, Christian Science church, Euclid Heights, Cleveland. Revised bids being taken.

400 tons, Massachusetts school of art, Brookline avenue, Boston.

392 tons, building, Boston Insurance Co., Boston.

300 tons, bank building, Middletown Bank & Deposit Co., Middletown, O.

250 tons, roundhouse, Boston & Maine railroad, Somerville, Mass.

110 tons, hangar, Boeing Airplane Co., Seattle. Bids being received.

150 tons, Cushman Dam project, Tacoma, Wash. Bids being received.

100 tons, flev highway bridges, New Jersey. General contract to Richards & Gaston, Somerville, N. J.

100 tons, Ohio Bell Telephone Co., exchange building, Maple Heights, O. General contract to Bolton-Pratt Construction Co.

Unstated tonnage, 60-story office building at Michigan avenue and Randolph street, Chicago for John F. Cuneo and O. W. Rosenthall. The Cornell Co. is general contractor.

Unstated tonnage, plant to cost $150,000 for Patterson Foundry & Machine Co., East Liverpool, O. Bids to be asked soon.

Unstated tonnage, two buildings, Women's Medical college, Philadelphia, and one building, Women's hospital, Philadelphia.

Unstated tonnage, 11-story office building, Louisville & Nashville railroad, Ninth street and Broadway, Louisville, Ky., to cost $1,000,000; general contract to United Engineers & Construction Co., New York.

Unstated tonnage, gymnasium building, New Rochelle, N. Y.

Unstated tonnage, athletic clubhouse, The Friars, Cincinnati, to cost $400,000; Crowe & Schulte, architects.

Unstated tonnage, 250,000 school building, Batavia, O.; Samuel Hannaford & Sons, Cincinnati, architects.

Concrete Bars

Large Tonnages Absent—Mesh Awarded in East—Bridge Takes 900 Tons

BECAUSE of the absence of large tonnage awards and inquiries, small quantities are receiving undue prominence. Three lots of mesh awarded in the East, involve 850 tons. New York subway work pending, will require more than 500 tons. Dravo Contract prices are low on the McKees Rocks, Pa., bridge, requiring 900 tons. Prices are weak at Cleveland but strong elsewhere.

REINFORCING BAR PRICES, PAGE 97

Chicago, July 9.—While some estimate that billet reinforcing bar tonnage closed this year is approximately 20 per cent under the comparable period of 1928, shipments of rail steel bars are heavier. Billet bar quotations are more nearly stabilized at 2.40c to 2.90c. Few large building projects now are in prospect, but a fair volume in small lots is being booked.

Chicago building permits in the first six months of 1929 showed a decrease of 36.25 per cent in value from the similar period last year.

Boston, July 9.—Approximately 500 tons were let in concrete bars this past week. Concrete Steel Co. received the bulk of the tonnage.

New York, July 9.—Concrete bar awards involving 20 to 35 tons at a time are numerous. Larger lots are falling off. A fair volume remains on inquiry, however. Demand for mesh for roadwork and buildings is seasonally active. Subway work in New York on which early action is expected will take in excess of 500 tons. Prices remain unchanged, but firm with fewer concessions reported. Mill deliveries range from seven to eight weeks.

Buffalo, July 9.—While there is considerable inquiry for small tonnage now pending, the total is much below that of second quarter's peak due to heavy buying in June. Producers say deliveries are good. More inquiry is expected to develop before Aug. 1. One 150-ton inquiry is the largest listed as new this week but no single order for as much as 100 tons is reported.

Pittsburgh, July 9.—About 900 tons of reinforcing bars will be required for the substructure of the McKees Rocks bridge across the Ohio river. The Dravo Contracting Co. is low bidder on the general contract. Other pending work largely is confined to small tonnages. Many such projects are being figured. Awards are confined to small lots also. Mill shipments continue heavy following active purchases during June. Distributors' stocks generally are small. Prices are well maintained at 2.30c, Pittsburgh, for cut lengths and 2.00c for stock lengths.

Cleveland, July 9.—Numerous 15 to 40-ton concrete bar jobs are being awarded but fabricators believe this situation will change shortly. A number of larger items on the boards will be let within a week or 10 days. These include a 300-ton addition for Richman Bros Co. and a similar tonnage for the jail-courts building here. Prices remain weak. The recent award for the Norton Co. warehouse went rail steel.

Awards Compared

	Tons
Awards this week	**3,927**
Awards last week	**6,971**
Awards two weeks ago	**7,774**
Awards this week in 1928	**4,670**
Average weekly awards, 1928	**6,189**
Average weekly awards, 1929	**6,416**
Averaye weekly awards, June	**5,527**
Total awards to date, 1928	**199,463**
Total awards to date, 1929	**179,650**

CONTRACTS PLACED

1000 tons, power house, Northern Indiana Public Service Co., Michigan City, Ind., to unstated fabricator.

400 tons (mesh), New York State highway work, to American Steel & Wire Co.

375 tons, Victor X-ray building, Chicago, to Joseph T. Ryerson & Son Inc.

250 tons (mesh), Bank of Manhattan, New York, to American Steel & Wire Co.

250 tons Washington state highways to North-

west Steel Rolling Mills.
202 tons, sewer project, Salina, Calif., to unstated company.
200 tons (mesh), Pennsylvania railroad office building, Philadelphia, to American Steel & Wire Co.
200 tons, building for unidentified interest, Boston, to Concrete Steel Co.
200 tons, subway route 1, section 101, to McClintic-Marshall Co. through Mason & Hanger Co.
200 tons, Washington state highways, to Pacific Coast Steel Co.
150 tons, San Point barracks, Seattle, to Northwest Steel Rolling Mills.
150 tons, hotel, Sacramento, Cal., to W. S Wetenhall Co.
150 tons, Norwegian-American hospital, Chicago, to Concrete Engineering Co.
100 tons, Oregon state highways, to Northwest Steel Rolling Mills.
100 tons, fire wall, Sixteenth and Wisconsin streets, San Francisco, to W. S. Wetenhall Co.

CONTRACTS PENDING

900 tons, substructure, McKees Rocks, Pa., bridge. Dravo Contracting Co. low bidder on general contract.
350 tons, garage, Jersey City, general contract to Industrial Engineering Co.
300 tons, 5-story addition, Richman Bros. Co., Cleveland. Bids being asked.
290 tons, refrigerated terminal, Tacoma, Wash. Bids in
250 tons, hotel, Pinewald, N. J.
200 to 300 tons, jail-courts building, East Nineteenth and Twenty-first streets, Cleveland. Bids to be asked late this week.
150 tons, building, New York State Telephone Co., Jamestown, N. Y.

Iron Ore

Shipments Continue Heavy—Market Is Quiet

IRON ORE PRICES, PAGE 98

Cleveland, July 9.—Shipments of Lake Superior iron ore continue heavy, after the record breaking first half. New market activity, however, is limited to occasional sales of cargo lots. Receipts at Lake Erie ports in June totaled 6,984,627 tons, 974,298 tons more than in June 1928, while shipments from the ports totaled 5,066,423 tons, and increase of 845,-236 tons over June of last year. The Lake Superior Iron Ore association reports the following receipts and shipments from Lake Erie prots for the season to July 1, 1929:

	Receipts	Shipments	Dock balance, July 1, 1929
Buffalo	1,621,628	100,856	3,422
Erie	409,196	415,975*	55,101
Conneaut	3,032,867	3,021,047	1,359,091
Ashtabula	3,031,550	3,086,625	1,261,032
Fairport	676,092	673,981	202,888
Cleveland	3,630,040	2,810,376	764,649
Lorain	1,349,342	739,823	59,287
Huron	533,394	536,037	342,492
Toledo	644,867	409,148	34,438
Total	14,928,976	11,793,868	4,082,400
Comp. 1 year ago	11,712,316	9,326,909	5,050,692

Receipts for the season to July 1 at other ports are as follows:

	Receipts
Detroit	215,900
Indiana Harbor	872,628
Gary	2,591,954
South Chicago	1,711,446
Milwaukee	.....
Boyne City	.....
East Jordan	.....
Sault Ste. Marie, Ont.	154,621
Point Edward, Ont.	172,165
Total	5,718,714
Comparative 1 year ago	4,136,252

Rails, Cars

Car Buying Slackens After Good June—Small Awards—Inquiries Smaller—Rails Active

AFTER placing about 5900 cars in June, railroads are slowing up their car awards. Manila railroad placed 200; Canadian Pacific 100. Few other negotiations are under way. Northwestern railroads will soon place approximately 30,000 tons of secondary rails. About 10,000 tons of fastenings are up. Rail shops on 80 per cent basis; accessory departments are 60 per cent.

RAILROAD TRACK PRICES, PAGE 98

Chicago, July 9.—Northwestern railroads have approximately 25,000 to 30,000 tons of secondary rail orders to place with Chicago district mills. Formal inquiries are expected soon. Rail mill operations continue at about 80 to 85 per cent. Track fastenings departments are at 60 to 65 per cent and sales last week totaled about 4000 tons. Including Pennsylvania's inquiry for 5000 tons of fastenings, about 10,000 tons now are pending.

Car building shops continue to send in specifications for finished steel to build cars now on order at the rate of 4000 to 5000 tons weekly.

New York, July 9.—Freight car buying is light, although substantial business is under negotiation in this district. Preliminary estimates point to approximately 5900 freight cars placed in June. Locomotive buying is spotty. Approximately 1900 freight cars are actively pending, mostly for eastern roads. Small inquiries prevail.

Philadelphia, July 9.—Reading Co. is expected to inquire this week for 200 mill type gondola cars. There appears to be no foundation for the recent report that the Pennsylvania would inquire for car bodies in addition to the 4000 recently distributed.

Toronto, Ont., July 9.—The Canadian Car & Foundry Co., Montreal, received an order from the Canadian Pacific railway for 100 steel cars. This order, with others on hand, gives the company $40,000,000 worth of business on its books for 1929, compared with $13,000,000 for all 1928.

Governmental departments at Newfoundland recently ordered 11,000 tons of rails from the Dominion Iron & Steel Co., Sydney, N. S., for delivery about Aug. 1. With 2650 workmen employed, the Dominion company's force is the largest since 1918, when it was engaged on war munitions. Mills have worked more steadily during the past six months than at any period during the previous five years.

CAR ORDERS PLACED

Canadian Pacific, 100 steel box cars to Canadian Car & Foundry Co.
International Railways, Central America, eight passenger cars, to Amercan Car & Foundry Co.
Manila railroad, 100 flat cars and 100 box cars to Gregg Co.
Norfolk & Western, 10 steel box express cars, to its Roanoke, Va., shops.
John A. Roebling's Sons Co., 12 gondolas to American Car & Foundry Co.

LOCOMOTIVE ORDERS PLACED

Delaware & Hudson, locomotive, to American Locomotive Co.
Illinois Northern, one switch engine to Baldwin Locomotive Works.
Standard Oil of Indiana, switch engine, to American Locomotive Co.
Timken Roller Bearing Co., Canton, O., one experimental locomotive, to American Locomotive Co.

CAR ORDERS PENDING

New York, New Haven & Hartford, 50 brick cars.
Chicago, Milwaukee, St. Paul & Pacific, 15 caboose underframes.
United Fruit Co., 50 banana cars.

LOCOMOTIVE ORDERS PENDING

Savannah & Atlanta, two 2-8-2 type locomotives and three switch engines.

Cooperage Report Sent Out for Acceptance

A summary report of the general conference on simplification of tight cooperage and tight cooperage stock for wooden barrels and kegs has been sent to manufacturers, distributors and users of this material for acceptance. The data are results of the findings of the general conference held in St. Louis, May 16, under auspices of the division of simplified practice, department of commerce, Washington, and in conjunction with the fourteenth annual convention of the Associated Cooperage Industries of America.

The report, if accepted, will become effective July 1, 1930, and will be open to such future modifications as trends in the industry may indicate desirable. The aim of the report is to bring about a general betterment in industrial conditions to stock manufacturers, barrel manufacturers and consumers.

Name of the De Mattia Wire Works Inc., Southport, Conn., has been changed to Rolock Inc. The management and policies of the company remain unchanged. The company manufactures wire cloth and screening for gravel and coal machinery.

Strip

Smaller Specifications Coming Out but Delivery Is Delayed—Automotive Slowing Is Cause

AUTOMOTIVE slackening is causing bookings of strip steel to fall behind shipments but deliveries have not yet caught up with demand. Cold-rolled strip is less active than hot-rolled. Prices remain steady at 2.75c to 2.85c, Pittsburgh, on cold-rolled, with a premium for small lots. Mill backlogs are sufficient to keep production at a high level.

STRIP PRICES, PAGE 98

Pittsburgh, July 9.—Specifications for strip steel from automotive interests show a more rapid decline, with the seasonal letdown accelerated. Mills still are operating with fair backlogs on some sizes, and delivery on certain widths is still extended more than a month. Cold-rolled strip is less active although shipments are deferred three to four weeks. The market on this material generally is 2.75c, Pittsburgh, although a certain tonnage continues to move at 2.85c. Hot strip is firm at 1.90c and 2.00c, Pittsburgh.

Worcester, Mass., July 9.—Cold-rolled strip production is beginning to feel the seasonal recession common to July and August, although an active demand from the radio industry is in evidence. Prices remain at 2.90c to 3.00c, base, Worcester.

New York, July 9.—New business in strip steel is lagging behind shipments, but prices are steady. Hot strip up to 6 inches is holding 2.00c, Pittsburgh, and 6 to 24 inches, 1.90c. Cold rolled strip is at a firm minimum of 2.75c, Pittsburgh, with a good volume of business going up to 2.85c, and in the instance of small, miscellaneous lots up to 2.95c.

Cleveland, July 9.—Strip steel demand is practically equal to May and June in the experience of one or two makers but others note a decided slackness. This is enabling them to catch up on deliveries and some can deliver in two weeks. One maker of hot narrow strips is filled through August. Another producer of wide hot strips is offering late August datings. Deliveries of cold strips are three or four weeks deferred. No price resistance is encountered on hot, 1.90c and 2.00c, Pittsburgh, being named on wide and narrow respectively. On cold 2.85c, Cleveland-Pittsburgh, is obtainable only on small lots; 2.75c, however, is minimum.

Chicago, July 9.—Fresh buying of cold rolled strip steel is showing more marked declines. Orders on hand extend backlogs about six weeks. Declines in automotive orders are having a more noticeable influence on specifications. Cold rolled strip quotations are reported steady at 2.75c to 2.85c, Pittsburgh-Cleveland.

Winning Slogan Chosen

"Investigate Electric Heat" was adjudged the winning slogan in the recent industrial electric heat contest conducted by the joint committee on electric furnace development of the National Electrical Manufacturers association and the National Electric Light association. It was submitted by W. H. Steinhauer, engineering department, Toledo Edison Co., Toledo, O. Returns in the contest numbered approximately 800 and evidenced wide interest in the subject of industrial electric heat and its many applications to the solution of industrial problems.

Cold Finished Steel

Further Slackening in Demand from Automotive Parts Makers

COLD FINISHED PRICES, PAGE 98

Pittsburgh, July 9.—Cold-finished bar producers note further slackening in demand from automotive parts producers, although a letup in operations over the recent holiday period was partly responsible. Tonnage to automobile builders is in slightly better volume than to parts makers although production of some interests continues to decline. Specifications so far this month show only a slight decrease from the rate a month ago. The market continues steady at 2.30c, Pittsburgh.

Cleveland, July 9.—Some cold bar finishers are less active on account of the recent recession in demand. Others have received fresh impetus from resumed specifications. Parts makers for popular priced cars are as active as in May and June, schedules for July and August being heavier. The 2.35c, Cleveland, price prevails.

Wire

Western Demand Tapers, While Pittsburgh Mills See Increase—Prices Continue Firm

CHICAGO wiremakers find business slackening and operations have been cut slightly. Sales for first half in the West are believed to be the largest except those of 1922. Pittsburgh producers find demand active and continue production at high rate. Nails continue dull and fencing has declined from the recent peak. Prices are unchanged.

WIRE PRICES, PAGE 98

Worcester, Mass., July 9.—Wire production continues far ahead of last year with demand strong and prices firm on a basis of 2.75c, base, Worcester, for plain bright wire to dealers. Demand for manufacturers' wire continues heavy, with predictions that third quarter tonnage will hold the ratio established for the first six months.

Buffalo, July 9.—Demand for wire products continues good. Mesh for road work is moving in volume that approaches record proportions. Automobile concerns have reduced specifications somewhat, but expansion of other lines is offsetting this and producers continue to operate at about 90 per cent of capacity.

Pittsburgh, July 9.—Specifications for manufacturers' wire continue at the more active rate noted a short time ago, with incoming business running well ahead of the early June rate. Demand for nails continues dull and fencing material also is moving slowly. Compared with the demand of preceding years, manufacturers' wire is showing unusual activity, partly due to a well sustained demand from some automotive interests. The price situation is unchanged, with plain wire continuing 2.50c to 2.60c, and wire nails $2.65 to $2.75.

Cleveland, July 9.—Wire demand holds up fairly well but nail demands continue to shrink. Prices are not firm on nails, but the wire base is well observed. Wire mill operations average about 70 per cent.

Chicago, July 9.—Sales of manufacturers' and merchants' wire, which have maintained a high volume throughout the six months just closed, are showing signs of tapering, due in part to declines in automotive orders. Sales of all wire products in the six months are believed to have been the highest with the exception of 1922. Business in wire nails is estimated to have been 25 to 30 per cent below what has been regarded as peak demand. Tonnage now coming on mill books is well distributed, but it is indicated specifications will show a decline this month. Woven fencing sales are good for this season. Wire mill operations in the West have been reduced slightly, to about 68 per cent. Manufacturers' stocks of woven fencing and nails are moderately heavy.

Nonferrous Metals

Lead Prices Decline 10 Points Because of Weakness in Market Abroad—Tin Quotations Steady but Sales Lag—Copper Firm

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead New York	Lead East St. Louis	Zinc St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
July 3	18.00	18.07½	17.37½	45.12½	45.90	7.00	6.80	6.70	23.90	8.50	35.00
July 4—Holiday.											
July 5	18.00	18.07½	17.37½	45.12½	46.00	6.90	6.72½	6.70	23.90	8.50	35.00
July 8	18.00	18.07½	17.37½	45.12½	46.00	6.90	6.72½	6.70	23.90	8.50	35.00
July 9	18.00	18.07½	17.37½	45.12½	46.00	6.90	6.70	6.70	23.90	8.25	35.00

NEW YORK, July 9.—Lead prices declined 10 points in the past week. Otherwise the nonferrous metal markets have been remarkably stable. This stability was largely the result of absence of demand under conditions in which producers saw the futility of trying to attract business with cut-prices. In the case of lead, the action was forced by the London market.

Brass and copper rolling mills are busy but new buying in the past week was not quite as active as through most of June. Brass sheets and forgings and copper wire are in relatively strong position in the mills on account of recent orders. Sales of copper tubing also have been fairly large. Copper sheet and brass tubing demand has been relatively quiet.

Copper—The domestic price basis is unchanged but very little business has been done. Custom smelters have been selling a few hundred tons a day. Export business has been about 1000 tons a day, or somewhat less than normal, but enough to balance the ore intake of custom smelters. Producers have little business on the books for shipment later than July.

Zinc—The price situation continues unchanged in a quiet market. Stocks of zinc in the hands of smelters in this country increased 3106 tons last month although output was cut about 4000 tons. Domestic shipments last month were 47,973 tons, compared with a little over 56,000 tons each in the three previous months. They were nearly 2000 tons lighter than a year ago. In the first half of this year, domestic shipments set a new record at 316,146 tons.

Tin—One day of heavy buying occurred about a week ago. As a whole, the market has been quiet and prices remarkably steady. Much of the buying has been for shipments well ahead, some into next year.

Lead—Continued weakness in London finally forced the market here down 10 points. Buying has been more steady than in the other metals, and mostly for July shipment.

Aluminum—New business has been light. Shipments show the seasonal tendency toward inactivity, but prices are firm.—*Daily Metal Trade.*

Mercury Is Firmer

New York, July 9.—Quicksilver is slightly firmer at $121 to $122.50 a flask. Spot supplies are scarce.

Coke By-Products

Export Movement Good—Phenol Supplies Low—Buy Benzol

New York, July 9.—A steady volume against contracts and a fair amount of new business continues in light oil distillates at steady and firm prices. There has been little recession in production, and supplies are moving into consumers' hands with no accumulations. Export business is fairly brisk.

Benzol, both pure and 90 per cent grades, is finding a ready market and considerable new business is being taken in addition to steady volume against contracts. Toluol is moving to manufacturers of lacquer in large shipments, while the dye industry also is a good buyer. No immediate decline in consumption of xylol is apparent and demand brings out a good volume of shipments. Solvent naphtha is generally unchanged, although a lull is reported by some producers.

Broad buying of phenol has failed to slow down to any extent and supplies are low, amounting to almost a shortage in some quarters. The bulk of the business is moving around 16 cents a pound in drums, producers' plants.

Naphthalene prices remain firm, with shipments good. Stocks of refined grades are not large. While some contracting for sulphate of ammonia is reported, the market is not generally out of the between-season period with the fertilizer industry.

Mill Products

Base price cents per pound f.o.b. mill, except where otherwise specified

SHEETS	
Yellow brass (high)	23.25
Copper, hot rolled	27.75
Lead, full sheets (cut ¼c more)	10.00
Zinc sheet (100-pound base)	$10.25
Zinc strip (100-pound base)	$9.25
Aluminum, flat sheets, up to 10 gage, 3 to 72 inches wide	31.30
SEAMLESS TUBE	
Yellow brass (high)	28.25
Copper	29.25
RODS	
Yellow brass (high, full turnings)	21.25
Naval brass	24.00
WIRE	
Copper	19.87½
Yellow brass (high)	23.75

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	12.00 to 12.50
Chicago	11.50
Cleveland	12.25 to 12.50
HEAVY YELLOW BRASS	
Cleveland	8.50 to 9.00
ZINC	
New York	3.25 to 3.50
Cleveland	3.25 to 3.50
HEAVY COPPER AND WIRE	
New York	14.25 to 14.50
Boston	13.50 to 14.00
Chicago	12.50
Cleveland	13.50 to 14.00
RED BRASS BORINGS	
New York	11.00 to 11.50
YELLOW BRASS TUBING	
Cleveland	8.50 to 9.00
LIGHT COPPER	
New York	12.25 to 12.50
Chicago	11.50
Cleveland	12.50 to 13.00
LIGHT BRASS	
Boston	6.75 to 7.25
Chicago	7.50
Cleveland	6.75 to 7.00
ALUMINUM	
Clippings, Cleveland	16.50 to 17.00
Borings, Cleveland	9.50 to 10.00
Cast, Cleveland	12.00 to 12.50
Cast, Boston	10.00 to 10.50

Secondary Metals

Remelt aluminum No. 12	17.00 to 17.50
Brass ingot, 85-5-5-5	16.25 to 16.50

Coke Oven By-Products

Per Gallon at Producers' Plant in Tank Lots

	Spot
Pure Benzol	$0.23
90 per cent benzol	0.23
Toluol	0.40
Solvent naphtha	0.3[illegible]
Commercial xylol	0.3[illegible]
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.1[illegible]
Per Pound at Producers' Plants	
Naphthalene flakes	0.05½ to 0.06[illegible]
Naphthalene balls	0.06½ to 0.07[illegible]
Per 100 Pounds Delivered	
Sulphate of ammonia	$2.20 to 2.25

Pool Abrasive Exports

Washington, July 9.—Durex Abrasives Corp. has filed papers under the Webb-Pomerene Export act whereby nine important makers of abrasive products have combined to pool their export efforts. The companies and officers are those listed in IRON TRADE REVIEW of June 13, page 1643, when preliminary plans were announced.

Warehouse

Holiday Curtails Tonnage Moved—Sales Seasonally Heavy—Buying Well Distributed—Quotations Well Observed

AS USUAL, the July 4 holiday exercised a deterrent effect upon warehouse trading. In most sections, however, buying promptly resumed on the scale enjoyed late in June. Sales are seasonally heavy. Cincinnati notes a decline in outside work. St. Louis is slow to resume following the strike settlement. Light rolled products are active at Pittsburgh. Buying is well distributed in each market. Prices generally are firm.

New York—Dullness for the first week of July, due to the holiday and inventory season, is being followed by more active trading in iron and steel out of warehouse. May and June exceeded trade expectations. Structural shapes continue active. Plates and galvanized sheets are slower.

Buffalo—Warehouse sales declined somewhat last week. Sellers anticipate a return to brisk business, approximating recent averages, this week.

Pittsburgh—Sales, smaller than a month ago, compare favorably with the late June rate. Favorable comparisons, too, are shown with the corresponding period of preceding years. Individual orders are small, with buying well distributed. Light rolled products continue active. Plates and bars move well. Nails are slow. Prices are steady.

St. Louis—Summer quietness brings a slowing down in demand from the general manufacturing trade. Purchases by railroads and automotive industries are less active. Tonnage released with the ending of the building trade strike is disappointing.

Cleveland—Demand for warehouse iron and steel continues heavy. A few consuming lines are buying less. Total bookings, however, are considered above normal for this season. Prices are firm and unchanged. All jobbers here now quote the recently adopted differentials on blue annealed sheets.

Cincinnati—The usual July lull in the warehouse business, coupled with curtailed outside work, caused bookings to drop slightly. Prices are firm.

Philadelphia—Recent trend toward greater stability in eastern warehouse markets has received further impetus by the adoption of Baltimore selling prices by Washington jobbers. This tends to remove opportunity for price cutting, recently characterizing competition between Baltimore and Washington warehousemen. Market prices here are unchanged but firm.

Warehouse Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.00c
Ft. Worth	3.75c
Houston	3.00c
Los Angeles	3.30c
New York ††‡‡	3.25c
Philadelphia*	2.80c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.15c
Seattle	3.15c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	3.75c to 4.04c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.00c
Ft. Worth	3.75c
New York††	2.80c to 3.24c
Philadelphia*	2.80c
St. Louis	3.15c
Tulsa	3.75c to 4.04c

REINFORCING BARS

Baltimore	3.31c
Boston	3.265c to 3.50c
Buffalo	2.95c
Cincinnati	3.15c
Cleveland	2.25c to 2.44c
Detroit	2.30c to 3.00c
Ft. Worth	3.50c
Houston	3.00c
Los Angeles cl.	2.65c
Los Angeles, lcl.	3.00c
New York	2.90c to 3.30c
Philadelphia	2.75c to 3.10c
Pittsburgh	2.90c to 3.175c
San Francisco cl.	2.00c
San Francisco lcl.	2.25c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.75c to 4.00c
Youngstown	2.30c to 2.60c

STRUCTURAL SHAPES

Baltimore	3.25c
Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.00c
Detroit	3.10c
Ft. Worth	4.00c
Houston	3.25c
Los Angeles	3.30c
New York ††‡‡	3.25c to 3.30c
Philadelphia*	2.70c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.14c

PLATES

Baltimore	3.25c
Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-in. and thicker	3.00c
Cleve., 3/16-in.	3.20c
Detroit	3.10c
Detroit, 3/16-in.	3.30c
Ft. Worth	4.00c
Houston	3.00c
Los Angeles	3.30c
New York‡‡	3.30c
Philadelphia*	2.70c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.14c

NO. 10 BLUE ANNEALED

Baltimore	3.60c
Boston 3/16-in.	3.915c
Buffalo	3.50c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.25c
Detroit	3.35c
Ft. Worth	3.50c
Houston	3.90c
Los Angeles	4.00c
New York‡‡	3.70c to 3.90c
Portland	3.75c
Philadelphia*†	3.25c
Pittsburgh**	3.35c to 3.45c
San Francisco	3.80c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.75c
Tulsa	4.20c to 4.34c

NO. 24 BLACK SHEETS

Baltimore*†	3.75c
Boston	4.85c
Buffalo	4.20c
Chicago	4.05c
Cincinnati	4.05c
Cleveland***	3.75c to 3.90c
Detroit	3.95c
Ft. Worth	4.70c
Los Angeles	4.90c
New York	4.00c
Philadelphia*†	4.10c
Pittsburgh**	3.85c
Portland	4.90c
San Francisco	4.90c
Seattle	5.00c
St. Louis	4.25c
St. Paul	3.89c
Tulsa	4.34c

NO. 24 GALVANIZED SHEETS

Baltimore*†	4.50c
Boston	5.60c
Buffalo	4.70c to 4.85c
Chicago	4.90c
Cincinnati	4.90c
Cleveland***	4.60c to 4.75c
Detroit	4.75c
Ft. Worth	5.50c
Houston	5.30c
Los Angeles	5.30c
New York	4.75c
Philadelphia*†	4.85c
Pittsburgh**	4.85c to 4.95c
Portland	5.50c
San Francisco	5.30c
Seattle	5.50c
St. Louis	5.10c
St. Paul	4.68c
Tulsa	5.10c to 5.35c

BANDS

Baltimore	4.00c
Boston	4.015c to 5.00c
Buffalo	3.65c
Chicago	3.20c
Cincinnati	3.50c
Cleveland	3.25c to 3.65c
Detroit, 3/16-in. and lighter	3.30c
Ft. Worth	4.25c
Houston	3.65c
Los Angeles	4.15c
New York‡‡	3.75c
Philadelphia*	3.30c
Pittsburgh	3.25c
Portland	4.00c
San Francisco	3.75c
Seattle	4.00c
St. Paul	3.50c
Tulsa	4.50c to 4.69c

HOOPS

Baltimore	4.00c
Boston	5.50c to 6.00c
Buffalo	4.05c
Chicago	3.75c
Cincinnati	4.05c
Cleveland	3.25c to 3.65c
Detroit, No. 14 and lighter	3.80c
New York‡‡	4.25c
Philadelphia*	3.55c
Pittsburgh	4.25c
Seattle	5.00c
St. Paul	4.00c

COLD FINISHED STEEL

	Rounds, hexagons, squares	Flats, squares
Baltimore (c)	3.50c	(a) 4.00c
Boston	3.55c	4.05c
Buffalo	3.95c	4.45c
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.65c	4.15c
Detroit	3.85c	4.35c
Los Angeles (a)	4.50c	
New York	3.60c	4.10c
Philadelphia*	3.60c	4.10c
Pittsburgh	3.70c	4.20c
Portland (a)	4.50c	
San Fran. (a)	4.25c	
Seattle (a)	5.00c	
St. Paul (a)	3.85c	
Tulsa	4.64c	5.14c

(a) Rounds only.

COLD ROLLED STRIP

Boston, 0.100-inch, 500 pound lots	5.30c
Buffalo	5.85c
Chicago (b)	6.10c
Cincinnati	7.15c
Cleveland (b)	5.95c
Detroit	5.80c
New York	5.15c
Philadelphia (c)	5.15c

(b) Net base, straightening cutting, boxing 1 ton or more

(c) Plus mill, size and quantity extras.

SWEDISH IRON AND STEEL
New York duty paid

Hollow drill steel	13.00
Iron bars, round	6.10
Iron bars, flats and squares	6.50

*Plus quantity differentials. ‡‡Minus quantity differentials. ††Domestic bars. **Less than 25 sheets. *† 50 or more bundles. ***Less 0.15c where more than 10 bundles are ordered at once for delivery at one time.

Pacific Coast

Selling Active Despite Summer Dullness — Plates and Pipe Move Well

CAST iron and steel pipe are in strong demand on the coast, a considerable tonnage of each being closed in the past week. A job at Vancouver, B. C., requires 5000 tons, the largest tonnage of the year. A pipe line at Seattle, for which bids have been opened, will take 10,000 tons. A French maker has been awarded a tonnage of cast pipe at Seattle.

San Francisco, July 6.—(*By Air Mail*)—The cast iron pipe market was the most active feature last week, more than 3000 tons being booked. Los Angeles alone placed over 2700 tons. Prices continue fairly firm and little shading is met.

Building activity is holding up remarkably well for this season and awards of large structures during June were considerably ahead of the aggregate for the previous two months.

Pig Iron and Coke

While some improvement in the rate of foundry operations is reported, sales and inquiries for both foundry iron and coke, continue to call for unimportant tonnages. Prices remain unchanged.

Coast Pig Iron Prices

Utah basic	$25.00 to 26.00
Utah foundry	25.00 to 26.00
*German	24.25
*Indian	25.00 to 26.00

*C.i.f. duty paid.

Bars, Plates and Shapes

Demand for concrete bars has improved somewhat in the past four or five weeks and awards this week aggregated 2692 tons. Larger bookings included 150 tons for a hotel in Sacramento, Calif. Pending business now exceeds 4000 tons. Prices remain unchanged and in the San Francisco district 2.30c, base, applies on carload lots and 2.60c on smaller tonnages. Los Angeles prices are $2 a ton higher.

Shape awards this week aggregated 1398 tons. Included among the larger bookings were 300 tons for a hospital at Eureka, Calif., placed with the Moore Drydock Co. and 600 tons for an exhibit building in Pomona for Los Angeles county, awarded to McClintic-Marshall Co. Pending business calls for more than 7500 tons. Plain material remains exceptionally firm at 2.35c c.i.f.

Other Finished Material

Important cast iron pipe bookings this week included 1425 tons of 8-inch and 1148 tons of 12-inch pipe for Los Angeles, placed with the American Cast Iron Pipe Co. Great Falls, Mont., and Newport Beach, Calif., are in the market for 162 tons and 724 tons respectively. The East Bay municipal utility district will open bids next week on 2331 tons. Pending tonnages now are in excess of 4500 tons. No action has yet been taken by the Pacific Gas & Electric Co. on its inquiry for 2263 tons of gas pipe. Los Angeles placed 227 tons of standard galvanized pipe with the Santa Fe Pipe & Supply Co. The La Canada Irrigation District, La Canada, Calif., placed 142 tons with the Huntington Iron Works.

Seattle Sales Active

Seattle, July 3.—Awards of plates, structurals, reinforcing materials and cast iron pipe in the Pacific Northwest exceeded 7000 tons this week. The largest contract involves 5000 tons of plates for a pipe job at Vancouver, B. C., this being the heaviest single tonnage of plates placed in this territory this year. Several outstanding jobs are pending. Pipe and fabricating plants are extremely optimistic regarding business for the remainder of the year.

Bars, Plates and Shapes

Mill prices on plates, shapes and bars remain firm at 2.35c while reinforcing is unchanged at 2.30c. There is no complaint of cutting.

Local steel mills report business holding up well, operations being unchanged. There is considerable tonnage in car lots but several important projects are pending. Reinforcing awards this week totaled 700 tons. Pacific Coast Steel Co. booked 200 tons for Washington highway jobs. Northwest Steel Rolling Mills took 250 tons for a Washington highway project, 100 tons for Oregon highway work and 150 tons for the Sand Point barracks. Puget Sound Bridge & Dredging Co. is low bidder for the $250,000 refrigerating terminal at the port of Tacoma, involving 290 tons of reinforcing. The Nisqually dam project, bids opened at Centralia, Wash., July 9, will call for 70 tons of reinforcing and 14 tons of structurals. Bids will be opened at Ellensburg Aug. 9 for a unit of the Kittitas reclamation project, involving 145 tons of reinforcing and 43 tons of steel for gates and lifts. Seattle will receive bids Aug. 2 for the Garfield steel bridge calling for 1150 tons of reinforcing.

Vancouver Engineering Works, Ltd., was awarded the contract for furnishing about 50,000 feet of 26 to 36-inch riveted steel pipe for a pipe extension at Vancouver, B. C., on a low bid of $292,963. This job involves about 5000 tons of plates and is the largest contract placed for this kind of steel placed in the Pacific Northwest this year. An additional award for 26,000 feet on the same project has been postponed. The Seattle Boiler Works has the contract for a steel pipe for Seattle, involving 450 tons of plates. The same company is building a burner for the Weyerhaeuser Timber Co.'s new plant at Klamath Falls, Oreg., involving 150 tons of plates and shapes. Western Pipe & Steel Co. has the contract for a siphon for the Vale, Oreg., irrigation project, involving 126 tons of plates and angles. Seattle will open bids July 16 for a water pipe extension project involving about 2500 tons of plates. Vancouver, B. C., will receive tenders July for 10,000 feet of 18-inch diameter steel water pipe.

While fabricating plants are well supplied with work no important inquiries have developed lately. Awards this week include 250 tons to Poole & McGonigle for a sorting rack for the new sawmill of the Hines Lumber Co. in Oregon, involving 250 tons of shapes. Puget Sound Bridge & Dredging Co. has the contract for a state highway bridge over the Solduc river calling for 80 to 100 tons of structurals. The Garfield street bridge, Seattle, bids Aug. 2, calls for 950 tons of structurals. Lindstrom & Feigenson have the contract for the East Thirty-third street viaduct, Portland, involving an unstated tonnage. Bids will be opened at Victoria, B. C., July 9 for a 250-foot steel bridge across the Capilano river.

Cast Pipe Active

Awards for cast iron pipe this week include 225 tons to the American Cast Iron Pipe Co. for the West Dravus street project, Seattle, and a similar quantity for the Westlake avenue north, Seattle, job, placed with French makers, general contract to G. Argentieri. Cast iron pipe salesmen report active demand for their product, several large jobs being up for action soon. Great Falls, Mont., is calling for bids July 8 for furnishing 3300 feet of 6 and 8-inch pipe. Vancouver, B. C., will receive tenders July 22 for furnishing about 60,000 feet of 4 to 12-inch cast pipe.

Completing Beam Mill

Buffalo, July 9.—Bethlehem Steel Co. is completing a new beam and column shop at its Lackawanna plant. Production has been begun on a partial scale, although the new unit will not be in full operation for another 30 days. It is understood the department will be used largely to produce material for use in the Bethlehem plants, and probably will not become a large factor in commercial fabricated material in this territory, as the Bethlehem company sold its fabricating establishment here recently to the McClintic-Marshall Co.

Would Make Youngstown a River Port

Pittsburgh, July 9.—Manufacturers in the Beaver, Mahoning and Shenango valleys are urging the slackwatering of the Beaver and Mahoning rivers from the Ohio river to Youngstown, O. It is estimated that construction of eight locks and dams will be necessary in a stretch of 50 miles.

An organization formed to promote this work points out that more than 20 plants in these valleys would take advantage of river transportation if it were afforded. A large tonnage of coal is received at plants in this district by rail and it is estimated that freight money savings on this movement and on the transportation of steel products down the Ohio and Mississippi rivers would be tremendous. At present coal is moved by rail from mines on the Mahoning river to a point 20 miles below the head of the Ohio river for $1.20 a ton, while its movement by river would cost 19 cents a ton.

The Youngstown Sheet & Tube Co. at present is hauling some wrought pipe tonnage to the Ohio river when destined for the South and Southwest. A plot of ground for storage has been obtained at Memphis, Tenn. The Youngstown company plans to ship steel pipe by rail to Woodlawn, Pa., 16.6 miles below Pittsburgh, where the material will be hoist into barges for further shipment south.

Operating Rates

Chicago Recovers 98, Pittsburgh Holds 95, Valley Maintains 90

Chicago—Shutdowns of a number of steelworks departments over the July 4 holiday brought ingot production to 95 per cent, but the rate now is being maintained at 98 per cent. Twenty-nine of the 36 steelworks blast furnaces in the district are active. The leading interest has ten active at Gary, nine at South Chicago, and one at Joliet. Sheet mill operations have been reduced to 75 to 80 per cent because of shortages of sheet bars. Wire mill operations have been slightly reduced to about 68 per cent. Cold strip mill operations now are 65 to 70 per cent.

Pittsburgh—Although the July 4 holiday seriously interfered with schedules of a number of finishing mills, ingot operations generally were maintained and the current rate continues at around 95 per cent. Several independent producers continue at physical capacity. Sheet mills, most of which were down last week from Thursday on, have been stepped up to about 95 per cent. Tin plate schedules, which were correspondingly affected, are higher at 90 to 95 per cent. Strip mills again have resumed capacity operations following shutdowns at some of the hot mills the latter part of last week. Pipe mill operations are unchanged at 60 to 70 per cent for welded and 70 to 90 per cent for seamless.

Buffalo—Operations in the Buffalo district were restored this week, following the Fourth of July holiday, to practically the same level as those maintained in May and June. Of 37 open-hearth furnaces in the district, 32 are making steel today, and physical reasons were assigned to the idleness of the others. July schedules will be almost up to those of June, although warm weather naturally will cut into productivity of crews.

Youngstown—Higher than normal summer rate of steelworks operations are presaged by the rush to resume work in practically all departments following the short Fourth of July shutdown. The general average for this district as disclosed by Monday's operations shows over 90 per cent capacity. This is about the same rate maintained through June. Of 51 independent open-hearth furnaces, 47 resumed melting yesterday. Bessemer operations are on the usual two-turn schedule. Steel corporation activities are unchanged at 90 per cent. Independent bar mill operations are around 70 per cent, the only department showing a lower output. Pipe mill operations call for 13 active out of 20 seamless and welded units, while the Republic Iron & Steel Co.'s electric welding mill now is scheduled regularly. Tin mills have resumed, including Liberty works at Leavittsburg, which was down for five weeks. Strip mills continue running at capacity. The Byers mill at Girard is operating rolling mills at 100 per cent, after a week's shutdown, and puddling department at 60.

Expansion Plans of Illinois Steel Co. Include Wide Flange Beam Mill

CHICAGO, July 9.—Fourteen open-hearth steel furnaces, with commensurate semifinished and finishing mill capacity, will be added by the United States Steel Corp. to the Gary and South Chicago works of the Illinois Steel Co. These furnaces will add approximately 1,500,000 tons of ingot capacity.

Among the finishing capacity projected under this expansion program is a structural mill concerning which the Illinois company states: "The structural mill to be built by the Illinois Steel Co. will supplement its present structural mills and will provide a full line of structural shapes, the same as furnished by the Carnegie Steel Co."

It is noteworthy that this means the production of wide flange structural sections for the first time in the Chicago district, where a large tonnage has been booked since these sections were introduced. In December, 1928, the Bethlehem Steel Co. started suit against the United States Steel Corp. and its subsidiaries, the Carnegie Steel Co. and American Bridge Co., alleging infringement of patents in rolling special sections.

In addition to the structural mill and 14 open hearths, expansion plans provide for blooming and slab mills and two plate mills. It is understood that some of the contracts will be awarded within a few weeks and that the construction program will get under way immediately. It has been reported that a strip mill would be added at one of the Illinois plants.

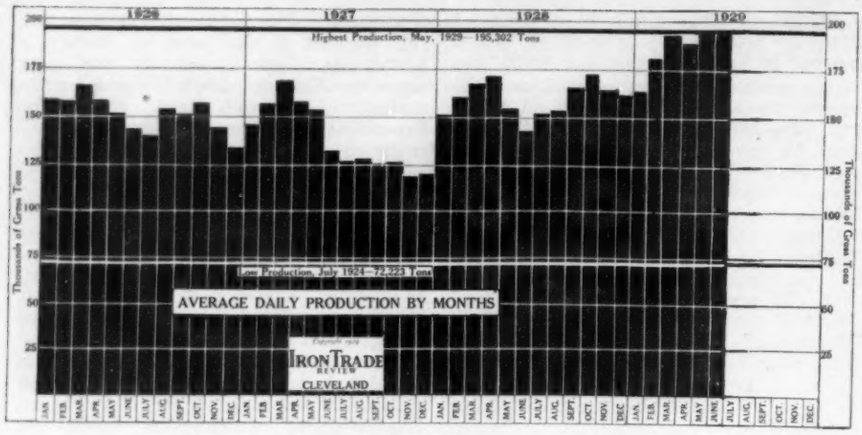
When this new ingot capacity is brought in, the Chicago district will almost equal the greater Pittsburgh district in point of ingot production. Including the contemplated extension, the Chicago district ingot capacity will be 10,198,835 gross tons. Of this the United States Steel Corp. accounts for 8,220,000 tons.

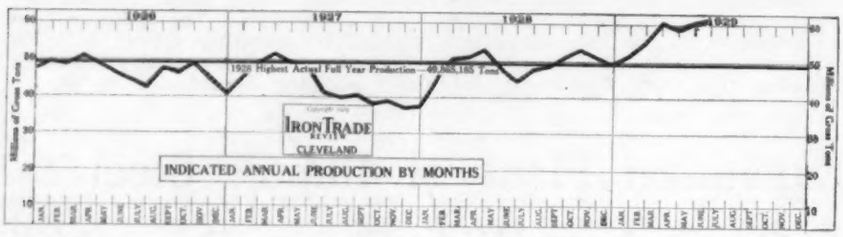
Including such nearby points as Munhall, Duquesne, Woodlawn, Braddock, McKeesport, Monessen, Clairton, Midland, Donora, Brackenridge and Vandergrift the greater Pittsburgh district has a total ingot capacity of 12,528,300 gross tons. These statistics are based upon the interstate commerce commission's report of steelmaking capacities as given in IRON TRADE REVIEW of June 27.

It appears that the Gary works of the Illinois Steel Co. will become the largest single steel producing unit in the United States. The Gary plant now has 45 basic open-hearth furnaces and the South Chicago plant, 27. With the addition of 14, these two plants will have a total of 86 open-hearth furnaces.

At its Gary works the Illinois company now has a billet mill unit of two blooming mills, two continuous billet mills, and a continuous sheet bar mill, besides a rail and blooming mill, an independent blooming mill and slabbing and axle mills. Present equipment at Gary also includes a 160-inch sheared plate mill and a 60-inch universal plate mill.

At South Chicago the equipment includes three sheared plate mills and a universal plate mill, as well as a slabbing mill, two blooming mills, two structural mills, a rail and blooming mill and a light rail mill.





June Ingots Almost Record

JUNE'S daily steel ingot rate of 195,255 gross tons was only 47 tons short of the alltime record of 195,302 tons established in May, according to the American Iron and Steel institute, New York. No June on record—no other month in fact, except May—ever witnessed so high a rate.

The short month cut into June's total, this being 4,881,370 tons, compared with 5,273,167 tons in May and 3,743,903 tons last June. The previous best June was in 1923, when the daily rate was 144,894 tons and the month's total 3,767,256 tons.

On a six-month basis a new record also was established. In the first half of this year ingot output has totaled 28,967,174 gross tons, compared with 24,798,073 tons in the opening half of 1928, topping the previous first half record. Taking the daily average rate of 186,885 tons in the first half as a criterion, 1929 production would approximate 60,700,000 tons, compared with the actual record of 49,865,000 tons last year.

Even on the basis of a higher rated capacity, steelmaking has engaged the industry fully. The June rate was 99.56 per cent of capacity, compared with 76.38 per cent last June. The first half operating percentage was 95.30, against only 84.32 in the opening half of 1928.

In the first half year output of open-hearth steel has totaled 23,770,871 tons and of bessemer 3,606,006 tons. These statistics are on the basis of reports from makers of 94.51 per cent of the country's steel. In the first half of 1928 only 20,176,095 tons of open-hearth and 3,261,702 tons of bessemer were produced.

It is noteworthy that beginning with February each month this year has seen a higher daily average rate than the alltime record set last October.

Steel Ingot Production—1928-1929

94.51 Per Cent of Industry Reporting

Gross Tons

1928	Open-hearth	Bessemer	Monthly output companies reporting	Calculated monthly output all companies	Number of working days	Approximate daily output all companies	Per cent of operation
Jan.	3,273,294	498,691	3,771,985	3,990,902	26	153,496	81.42
Feb.	3,300,407	521,250	3,821,657	4,043,457	25	161,738	85.80
March	3,692,648	567,330	4,259,978	4,507,217	27	166,934	88.55
April	3,505,104	564,110	4,069,214	4,305,382	25	172,215	91.35
May	3,394,301	582,128	3,976,429	4,207,212	27	155,823	82.66
June	3,010,341	528,193	3,538,534	3,743,903	26	143,996	76.38
6 mos.	20,176,095	3,261,702	23,437,797	24,798,073	156	158,962	84.32
July	3,068,257	528,588	3,596,845	3,805,598	25	152,224	80.75
Aug.	3,379,625	569,771	3,949,396	4,178,610	27	154,763	82.10
Sept.	3,375,654	544,710	3,920,364	4,147,893	25	165,916	88.01
Oct.	3,795,800	599,098	4,394,898	4,649,968	27	172,221	91.36
Nov.	3,442,112	590,669	4,032,781	4,266,835	26	164,109	87.05
Dec.	3,301,114	496,679	3,797,793	4,018,208	25	160,728	85.26
Total	40,538,657	6,501,217	47,129,874	49,865,185	311	160,338	85.05
1929							
Jan.	3,694,218	549,616	4,243,834	4,490,354	27	166,309	84.80
Feb.	3,599,224	489,279	4,088,503	4,326,000	24	180,250	91.91
March	4,183,869	596,691	4,780,560	5,058,258	26	194,548	99.20
April	4,026,576	640,351	4,666,927	4,938,025	26	189,924	96.84
May	4,276,186	707,484	4,983,670	5,273,167	27	195,302	99.59
June	3,990,798	622,585	4,613,383	4,881,370	25	195,255	99.56
6 mos.	23,770,871	3,606,006	27,376,877	28,967,174	155	186,885	95.30

Figures exclude crucible and electric ingots. Operation percentages for 1928 are based on an annual open-hearth and bessemer steel ingot capacity of 58,627,910 tons as of Dec. 31, 1927; 1929 percentages based on capacity of 60,990,810 tons as of Dec. 31, 1928.

Tariff Revision Making Progress Slowly

Washington, July 9.—Although the senate finance committee aimed to have the re-written tariff bill ready for introduction when the senate reconvenes Aug. 19, it seems doubtful that the bill will be ready before Sept. 1. Senator Smoot, of Utah, chairman of the committee, has conceded that some delay will ensue.

Hearings probably will be brought to a close about July 25. Were the house bill to be revised by Aug. 19, only three weeks would be left for consideration by members of the committee, and this is believed to be inadequate. There is considerable talk that congress will not be able to enact any tariff legislation during the extra session.

The metals subcommittee of the senate finance committee, headed by Senator Reed of Pennsylvania, took testimony yesterday on the remaining items of the metals schedule, including watches. A number of automobile manufacturers have been invited to appear before the subcommittee July 11. On the same date hearings are scheduled to begin before the full finance committee on the free list and the administrative sections of the tariff bill.

Open Laughlin Library

The Laughlin Memorial library was dedicated July 6 at Ambridge, Pa., to the memory of Alexander Laughlin Jr., formerly president of the Central Tube Co., Pittsburgh, who died three years ago.

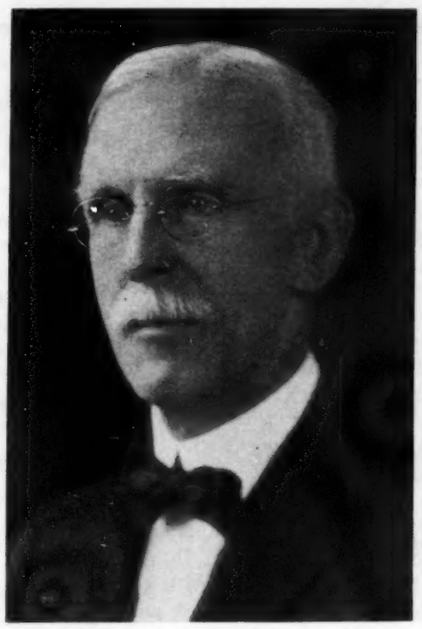
Industrial Men in the Day's News

A. J. Lockwood, New President of the American Steel and Heavy Hardware Association

APPRENTICED at 16 at the steel mills of Sheffield, Eng., he early turned from production to selling, later being sent to America by his employers.

MERCHANDISING of imported steel gradually gave way to steels made in Pittsburgh, and the sales company he formed was later merged with three others to form Edgar T. Ward's Sons Co.

FOR many years active in trade association work, he in various ways has served the organization of which he now becomes head.



RETROSPECTIVE glances by A. J. Lockwood, recently elected president of the American Steel and Heavy Hardware association, bring numerous memories of a boyhood apprenticeship served in the Sheffield, Eng., steel mills of Joshua Moss & Gamble Bros. Mr. Lockwood now is chairman of the board of Edgar T. Ward's Sons Co., Newark, N. J., and for many years has devoted his energy and ability to selling and distribution of steel rather than its production, in which through his 5-year course at Sheffield he really became quite proficient. Sheffield steel in the 70's was considered the best produced in the world.

Mr. Lockwood has lived to see many changes in methods and numerous innovations introduced since he entered the Sheffield works as a boy of 16. These inaugurations were not alone in production practices but in distribution as well. He recalls, with a smile, the heated discussion incidental to the introduction of bessemer steel into rail manufacture, regarded as "dangerous" by many industrial leaders when the idea first was promulgated. His father was a steelmaker before him and while his apprenticeship won for him the testimonial that he too could make steel, he early became a student of sales and distribution methods. His close application to his job attracted the attention of his superiors and his Sheffield employers. Mr. Lockwood was granted opportunities to enter several departments not easily available to the average young man.

When the company required the services of a man, who knew steelmaking, to fit into an expanded selling program, Mr. Lockwood was ready. He was sent to the United States as a sales representative. He was located at Philadelphia and New York but returned periodically to Sheffield. In 1878 he was married and decided to locate permanently in Philadelphia.

In 1880 he became the representative of Vickers Ltd. in the United States, selling its commercial steels. Associated with E. A. Temple, he organized Temple & Lockwood to handle Vickers steels. This they did until 1900 when, upon the retirement of Mr. Temple from business, Mr. Lockwood continued for a while under his own name and later, for many years, as Dilworth, Lockwood & Co. With the gradual decline, however, in imported steel, he added many well-known lines of steels made in the Pittsburgh territory.

The Edgar T. Ward's Sons Co. of which Mr. Lockwood now is chairman was organized Jan. 1, 1918. In addition to Mr. Lockwood's company, Dilworth, Lockwood & Co., New York, it took in Edgar T. Ward's Sons, Boston; George Nash Co., New York and Chicago; and the Field Co., Philadelphia. Nine warehouses are operated at New York, Boston, Philadelphia, Buffalo, Cleveland, Detroit, Milwaukee, Chicago and Newark, N. J. The president of the present Ward company is E. L. Parker, Carnegie, Pa., and the organization is closely interlocked with the Columbia Steel & Shafting Co., of which Mr. Parker also is president.

Mr. Lockwood, a pioneer in the warehousing of steel, has always been an advocate of service in steel dis-

tribution, with stocks nearer the points of consumption. He makes his headquarters at Newark, N. J., and has been a resident of Glen Ridge, a suburb, for more than 40 years. He considers work and traveling his leading recreations, the two being closely interlocked, since he makes regular visits to the various warehouses of the company. He is a strong believer in moderate exercise and whenever possible he walks instead of rides.

For a long period Mr. Lockwood has taken an active interest in trade association effort. Several years ago he became identified with the organization of which he now is head—the American Steel and Heavy Hardware association—and always has been ready to serve it. His successful service in his own company bespeaks a like measure of success as chief executive of the steel and heavy hardware association.

Men of the Industry

WILLIAM L. DITGES has been elected vice president in charge of engineering of the Mackintosh-Hemphill Co., Pittsburgh. He has been associated with the company since 1916, during which time he occupied the positions of chief draftsman, assistant chief engineer, and chief engineer. Mr. Ditges received his education at State College of Cologne, Germany, and came to the United States in 1909. Prior to going with the Mackintosh-Hemphill Co. he was connected with the Carnegie Steel Co. at New Castle, Pa., Nichols Copper Co., New York, and Bethlehem Steel Co.

W. R. Duda has been appointed chief engineer to succeed Mr. Ditges. Mr. Duda has been connected with the Mackintosh-Hemphill Co. for the past 11 years, and for the last several years as assistant chief engineer. His previous connections included five years with United Engineering & Foundry Co. and four years with American Sheet & Tin Plate Co.

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W. W. Cusac has become identified with the Chicago sales office of the American Hoist & Derrick Co., St. Paul. He formerly was with the McMyler-Interstate Co., Bedford, O.

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Clarence A. Earl, formerly vice president of the American Hardware Co., New Britain, Conn., was recently made president of the Charles Freshman Co., Chicago, radio manufacturer.

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J. S. Ervin has been made vice president and manager of sales, and Arthur G. Spurlock has been named vice president and treasurer of the H. H. Robertson Co., Pittsburgh, industrial plant engineers and constructors.

* * *

W. T. Haggard, Pittsburgh and Buffalo district sales manager for the J. A. Fay & Eagen Co., Cincinnati, manufacturer of woodworking machinery, has been appointed general manager. He left recently for a trip to the Pacific Coast to visit the company's district offices.

* * *

Edmund F. Krause, for nine years branch manager at Los Angeles for the Wickwire-Spencer Steel Corp., New York, was recently appointed Pacific Coast representative of the Worcester Pressed Steel Corp., Worcester, Mass., George W. Prentiss Co., Holyoke, Mass., and other wire products manufacturers.

* * *

J. Marvin Doyle of Garden City, N. Y., engaged for 20 years in distribution of tin plate, sheets and other steel products in New York, resigned recently from Dickerson, Van Dusen & Co. He has been connected with this company since the dissolution of Colladay, Doyle & Co., in which corporation he was vice president in charge of sales and purchases.

* * *

William H. M. Riker, formerly general superintendent of gray iron and malleable foundries of the Bridgeport Malleable Iron Works division of the Eastern Malleable Iron Co., Naugatuck, Conn., resigned recently to become consultant in foundry work. He will specialize in sand reclamation, with headquarters in the Wiss building, Newark, N. J.

* * *

Christian Wilson Jr., formerly general manager of the Montreal plant of the Bryden Neverslip Co., recently was elected general superintendent of the Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa. He succeeds F. D. Andrews, resigned. After graduation from Lehigh university, with a mechanical engineer's degree, Mr. Wilson became affiliated with Bethlehem Steel Co., and later was with Pennsylvania Power & Light Co.

* * *

J. G. Belding, for 11 years general manager of the Lombard Iron Works & Supply Co., Augusta, Ga., was elected president, July 3, to succeed the late George R. Lombard, founder. Mr. Belding has been with the company 39 years, starting July 1, 1890, with the George R. Lombard Co. as timekeeper in the machine shop. By successive promotions he has reached the chief executive office, having been order clerk, shipping clerk, assistant store keeper, manager of the mill supply department, secretary and general manager.

Other officers are: Treasurer, W. A. Rigsby; secretary, S. A. Fortson; and superintendent, H. M. Leitner.

* * *

H. R. Smallman, for three years assistant to the sales manager of the Hanson-Van Winkle-Munning Co., Matawan, N. J., manufacturer of electroplating and polishing equipment and supplies, has been appointed manager of the Chicago office with headquarters at 549 West Washington boulevard.

H. M. Cherry, for seven years representative of the company in Michigan, was made Detroit manager with headquarters at 5415 Twelfth street.

Louis M. Hague, for two years representative of the company in western Pennsylvania was made manager of the Pittsburgh-Cleveland office with headquarters at 106 Liberty avenue, Pittsburgh. This latter territory comprises Ohio, western Pennsylvania and West Virginia.

* * *

T. W. Battle has been appointed district manager at Charlotte, N. C., for the Combustion Engineering Corp., 200 Madison avenue, New York, with headquarters at 919 Johnston building, Charlotte.

I. S. Forde has been appointed acting district manager of the Atlanta territory, with offices in the Candler building, Atlanta, Ga. He succeeds T. J. Cleary, resigned.

E. C. Walthall has been appointed New Orleans district manager, with headquarters at 1118 Union Indemnity building, New Orleans.

C. R. Herron is manager of the Memphis, Tenn., territory, with headquarters at 816 Dermon building.

J. W. Mason is Houston territory

manager, with offices at 818 Niels Esperson building, Houston, Tex.

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Charles B. Bohn, head of the Bohn Aluminum & Brass Corp., Detroit, was recently added to the board of directors of the Fidelity Trust Co., Detroit.

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E. J. Frost, founder of the Frost Gear & Forge Co., Jackson, Mich., was recently granted the honorary degree of mechanical engineer by Michigan State college.

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R. G. Hudson, assistant secretary of the New Jersey Zinc Co., Newark, N. J., has been elected secretary, succeeding A. P. Cobb, who continues as vice president.

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H. T. Swanson, secretary and treasurer of the Art Metal Construction Co., has been elected president of the Jamestown, N. Y., Association of Credit Men.

* * *

E. K. Miller, blast furnace superintendent at Fairfield, Ala., for the Tennessee Coal, Iron & Railroad Co., has resigned. In August he will become identified with Jones & Laughlin Steel Corp., in the Pittsburgh territory.

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John O. Tucker, formerly general sales manager of the Wheeling Steel Corp., Wheeling, W. Va., has become affiliated with the firm of Mitchell, Tucker & Co., with offices in Wheeling, W. Va., and Washington, Pa., to deal in securities.

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Robert S. Dutton, who is retiring as manager of sales of Pickands, Brown & Co., Chicago, as noted in the IRON TRADE REVIEW of July 4, also has resigned as a member of the board of directors of Pickands, Brown & Co., Zenith Furnace Co., Duluth, and the Embree Iron Co., Chicago.

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W. H. Kay has been appointed district sales manager at Kansas City, Mo., for the Surface Combustion Co., Toledo, O. He has been identified with this company for several years, initially in the erection department and then in the estimating and sales departments.

* * *

J. Harry Nelson, mayor of Bay City, Mich., and one of the originators of the Bay City Industrial Service Co., resigned recently as general superintendent of the Bay City plant of the Industrial Brownhoist Corp., Cleveland. He is to become manager of the Industrial Service Bank, Bay City.

* * *

Cornelius F. Kelley, president of the Anaconda Copper Mining Co., New York, has been awarded the gold medal for 1929 of the Mining and Metallurgical Society of America for "distinguished services in the expansion and stabilization of the mining industry." The presentation will take place at a meeting in New York next fall.

* * *

Thomas W. Stone was elected vice president of the Western Gas Construction Co., Fort Wayne, Ind. He was graduated from Ohio State university in 1902 and entered that company's employ in June of that year. He since has served successfully for 27 years as draftsmen, superintendent of erection, assistant engineer and chief engineer.

* * *

C. E. Postlethwaite, general sales manager, has been appointed assistant vice president of the Pressed Steel Car Co., with headqarters in New York.

F. O. Schramm has been appointed general sales manager of the eastern district. He was formerly assistant general sales manager of that district. His headquarters are in New York.

* * *

Merton W. Zeman, sales manager, machine division, Osborn Mfg. Co., Cleveland, has returned from Europe. He was accompanied by William Rawlinson, managing director, J. W. Jackman & Co., Manchester and London, Eng., English representatives of the Osborn company. Mr. Rawlinson will inspect the plant of the Osborn company and visit foundries in which that company has installed machinery.

* * *

Jerry Donohue, consulting engineer and president of the Jerry Donohue Engineering Co., Sheboygan, Wis., has been selected by Gov. Kohler of Wisconsin as chairman of the newly created full-time highway commission of Wisconsin. Mr. Donohue formerly was division engineer of the Tennessee Coal, Iron & Railroad Co., and superintendent of the Lake Shore & Western division of the Chicago & North Western railroad.

* * *

Dr. John Chipman and John D. Strong have been added to the staff of the research engineering staff of the University of Michigan, Ann Arbor, Mich. Dr. Chipman, beginning Aug. 1 will devote his time to a study of steel melting practice. He has been assistant professor of chemistry since 1924 at the Georgia school of technology.

Mr. Strong received a master of science degree from the University of Michigan last year and since has been working for his doctor's degree in physics, specializing in the field of absorption spectra. He has been assistant investigator since the middle of June and now will make a special study of pyrometer practice.

* * *

James F. Ednie, foreman of the tool treating shop of the armor plate department, Carnegie Steel Co., Homestead, Pa., will on July 15 become assistant metallurgist of the Union Switch & Signal Co., Swissvale, Pa.

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F. L. McFadden, Lincoln avenue, Wickliffe, O., has been elected president of Wheatcroft-McFadden-Glass Inc., Cleveland, successor to Wheatcroft & McFadden, sheet metal contractors and furnace dealers.

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A. W. Newby, former vice president, has been elected president and general manager of the Huber Mfg. Co., Marion, O., motor rollers, road tractors, etc. He succeeds S. E. Barlow, now chairman of the board.

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James A. Bohannon, formerly vice president of the Marmon Motor Car Co., Indianapolis, and Don P. Smith, formerly assistant to the president of the Guardian-Detroit Co., Detroit, have been elected president and vice president, respectively, of the Peerless Motor Car Corp., Cleveland.

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R. N. Jessop, formerly Chicago district sales manager of the motor department of the Ohio Electric & Controller Co., Cleveland, with headquarters at 333 North Michigan boulevard, Chicago, has been appointed sales engineer with offices at the main plant, 5900 Maurice avenue, Cleveland.

* * *

Herbert F. Perkins has been elected president of the International Harvester Co., Chicago, to succeed Alexander Legge, retiring after seven years in that office to become chairman of the new federal farm board appointed by President Hoover. Mr. Perkins began his service with the McCormick Harvesting Machine Co. in 1898, and has been with the International Harvester Co. since its organization. For seven years he has been first vice president.

* * *

H. J. Freyn, president of the Freyn Engineering Co., Chicago, sailed for Europe July 7 on a business trip to extend through the summer. Mr. Freyn will visit Russia where 14 Freyn engineers and specialists are engaged in engineering work in connection with the rehabilitation of the soviet iron and steel industry.

F. H. Willcox, vice president of the

(*Concluded on Page* 120)

Here and There in Industry

Timely Information Which Records Developments in Various Lines of Productive Enterprise

NEWHALL CHAIN FORGE & IRON CO., 9 Park place, New York, has completed negotiations for the purchase of the chain shop and other buildings of the Rensselaer Chain Works, Rensselaer, N. Y., an established chain manufacturing plant, with adjoining property to provide for expansion. This shop is equipped for the production of high grade, hand-made, heavy-duty chain. It has been under the operation of the purchasers for several years. Benjamin R. Smith, superintendent of the Rensselaer shop under the Newhall management, died June 14 in his eighty-third year and is succeeded by his son, Samuel Smith, who has been assistant. Newhall Chain Forge & Iron Co. is a division of the Henry B. Newhall Corp., other divisions being the Diamond Expansion Bolt Co. and the New Jersey Foundry & Machine Co.

* * *

BURNS SPECIALTY CO., Haynesville, La., has built an addition to its shop for the production of oilfield tools.

* * *

BUTLER-EDWARDS CO. has succeeded Bozard-Butler Welding & Machine Co., 1822 Texas avenue, Shreveport, La.

* * *

TOLBERT WELDING & MACHINE CO. is the new name for Tolbert-Euford Welding & Machine Co., Shreveport, La.

* * *

MONROE SCRAP MATERIAL CO., Monroe, La., scrap metal dealer, has moved to a new warehouse recently completed at 116 Hall street.

* * *

AMERICAN INDUSTRIAL SUPPLY CO. has moved its general offices and show room to 25 West Broadway, New York. The company deals in industrial finishing equipment.

* * *

BANTAM BALL BEARING CO., South Bend, Ind., has taken an order for 75,000 clutch release bearings from the Ford Motor Co., 10,000 sets to be delivered weekly. The company recently produced a 22-inch diameter roller bearing for replacement on the rudder equipment of a transatlantic ship. The bearing was made and shipped in a week.

* * *

MAGNETIC MFG. CO., Milwaukee, is having plans drawn for a 60-foot addition to its plant. A number of machine tools will be required for the extension. The addition and equipment is to cost about $30,000.

* * *

GOSLIN-BIRMINGHAM MFG. CO. INC., Birmingham, Ala., has been formed by consolidation of the Birmingham Machine & Foundry Corp. and the Joubert & Goslin Machine & Foundry Co., both of Birmingham.

* * *

SOUTHERN NIPPLE MFG. CO., manufacturer of pipe nipples, Dallas, Tex., has moved to Fourth and Ash Lane streets, in a building 60 x 100 feet. C. J. Farwell is president and manager.

* * *

STEEL BLANKING CO., Sandusky, O., was incorporated recently as a subsidiary of the Trottner Steel Co., Sandusky, and will operate as a division in the same line of steel fabrication.

* * *

FAIRCHILD - KREIDER - REISNER AIRCRAFT CO., Hagerstown, Md., John Squiers president, has scheduled the production of 75 sport biplanes for July. An additional building has increased capacity to allow this expansion.

* * *

INTERNATIONAL MACHINE TOOL CO., Indianapolis, has sufficient orders on books to assure capacity operations until September. The company is offering a new line of heavy-duty turret lathes to meet requirements of tungsten carbide tools.

* * *

WHEELING MOLD & FOUNDRY CO., Wheeling, W. Va., recently poured a steel casting weighing 240,000 pounds, to be used as a hammer block by the Fiat motor works in Italy. To make this casting 331,000 pounds of metal was poured.

* * *

AMERICAN HOIST & DERRICK CO., St. Paul, has opened a branch office and warehouse at 337 South Anderson street, Los Angeles. W. H. Lummus, who has represented the company on the Pacific coast for several years, is in charge of the office.

* * *

BEALS, McCARTHY & ROGERS, INC., Buffalo warehouse operators, have purchased the entire stock of the W. H. H. Newman Co., Buffalo, including galvanized and black sheets, sheet copper and boiler tubes. The stock will be consolidated with that of the purchasing company.

* * *

BRO-DUN METAL PRODUCTS CO., Lancaster, Pa., has bought the plant and equipment of the General Metal Products Co. and will continue the manufacture of brass, bronze and aluminum castings, bearing and bushing metal. E. P. Brock and J. S. Dunie head the new company.

* * *

DOELGER & KIRSTEN, Milwaukee, manufacturer of alligator shears, will be continued without change in policy or personnel, following the death of Charles H. Doelger. The company will consist of Oscar Kirsten, J. R. Poyser and Oscar Kirsten Jr.

* * *

FERGUSON-ALLAN CO. INC., Batavia, N. Y., heretofore concentrating on reconditioning locomotives in connection with its steel plate shops, is now manufacturing road-building and excavating equipment, as well as maintaining its steel plate shops.

* * *

PIONEER INSTRUMENT CO., Brooklyn, N. Y., manufacturer of aviation instruments, has been bought by the Bendix Aviation Corp., Chicago. Charles H. Colvin, general manager of the Pioneer company, will be a director of the Bendix corporation.

* * *

BRODERICK FIRESAFE HOMES ASSOCIATION, 5 Beekman street, New York, has shipped materials for five steel houses to Cartagena, Colombia, South America, to be erected in a suburb, Tesca, by the National Construction Co., of Cartagena, the first of a large group of this construction.

The buildings, in addition to being fire-proof, are earthquake-proof and proof against attacks of the white ant, a menace to timber construction. The shipment included steel framework, roof and floor members, wire lath, plumbing fixtures and hardware, wrought iron fencing, pipes and other items.

* * *

BRISTOL CO., Waterbury, Conn., has started construction of a 1-story heat treating department, of brick and steel construction.

* * *

BOOTH & FLINN CO., constructor of roads, tunnels and subways, has been bought from the estate of George H. Flinn by A. Rex Flinn, who will continue the business.

* * *

CONSOLIDATED-ASHCROFT-HANCOCK INC., has moved its executive offices from 100 East Forty-second street, New York, to Bridgeport, Conn.

* * *

DOEHLER DIE CASTING CO. has installed an electric heat treating furnace at its plant at Batavia, N. Y., for treatment of aluminum castings for airplane and outboard motors.

* * *

FRAZIER-ELLMS CO., engineer, Cleveland, has changed its name to the J. W. Frazier Co. The offices of the company are at 1010 Euclid avenue.

* * *

GEARENCH MFG. CO., Houston, Tex., manufacturer of wrench tools, has increased capital from $7500 to $150,000 to provide for expansion.

* * *

BLANCHARD MACHINE CO., Cambridge, Mass., manufacturer of grinding machinery and grinding wheels, has completed an addition which will be equipped for assembling and testing surface grinders.

* * *

DORK FOUNDRY CO., owned by F. W. Dork and P. L. Berke, has opened a foundry at Fifty-second avenue west and Polk street, Duluth. It will produce automotive parts and accessories.

* * *

PEDEN IRON & STEEL CO., Houston, Tex., is building a four-story office building in Baker street at the San Jacinto bridge. It will be 80 x 150 feet. B. F. Watts is general manager.

* * *

SELDEN CO., Pittsburgh, manufacturer of chemicals, has been acquired by the American Cyanamid Co., New York. The Selden Co. will be operated as an independent unit. J. M. Selden is president.

* * *

TEXAS AERO CORP., Temple, Tex., manufacturer of airplanes, has begun removal of its factory and general offices to Dallas, Tex. George W. Williams is president and Roy Sanderford is general manager.

* * *

JAMES HUNTER MACHINE CO., manufacturer of textile machinery, North Adams, Mass., is building an addition to care for increased business. The new building will be equipped with two traveling cranes and will add 11,500 square feet.

* * *

WESTERN ELECTRIC CO., Chicago, is organizing a German subsidiary, the Deutscher Western Electric Gesellschaft, with 40,000,000 marks capital. The subsidiary is to manufacture electrical sound apparatus.

* * *

APOLLO STEEL CO. has begun installation of several heating furnaces at its Apollo, Pa., plant. This equipment will increase normalizing capacity in addition to replacing some old equipment. The company has completed the most active six months in its history in shipments.

* * *

ILLINOIS TOOL WORKS, 2501 North Keeler avenue, Chicago, has completed a 1-story plant addition, 150 x 150 feet, giving a total floor area of 78,000 square feet. The company has just acquired a plant site, 174,427 square feet, sufficient to afford additional building expansion.

* * *

LA BELLE TRANSPORTATION CO., operating a barge line as a subsidiary of the Wheeling Steel Corp. hereafter will be known as the marine department of the Wheeling company. Capt. Thomas Cavanaugh will continue as general superintendent of river transportation.

* * *

RICHARDS-WILCOX MFG. CO., hardware specialties, Aurora, Ill., has purchased a 4-story and basement building, lot 20 x 180 feet, at 311 West Lake street, Chicago, from the Reading Hardware Corp., Reading, Pa., which now occupies the property.

* * *

WILLIAM M. BAILEY CO., Pittsburgh, has sold to a large steel manufacturer in England an American electric rotary clay gun complete, with an option on three additional guns. The same company will build for the new furnace of the Wheeling Steel Corp. an American electric rotary clay gun, an American Safety cinder notch stopper and a Vreeland pug mill for handling flue dust. Clay guns now are under construction for the Lackawanna plant of the Bethlehem Steel Corp. and for the South Chicago plant of the Wisconsin Steel Co.

* * *

STRUTHERS-WELLS CO., Warren, Pa., manufacturer and engineer for welded steel plate and alloy steel construction, has moved its New York offices from 50 Church street to 285 Madison avenue.

* * *

STEVENS & WOOD INC., New York, constructor and engineer for public utilities, has received a contract to construct a steel tower transmission line from Toronto, O., to Akron, O., to serve properties of the Northern Ohio Traction Co. The line will require 580 steel towers.

* * *

TRANSMISSION ENGINEERING CO., Philadelphia, has been formed by L. H. Shingle and associates to specialize in transmission problems. The company will devote its efforts to obtaining and applying data on economical methods of mechanically transmiting power.

* * *

KIRK-MORROW IRON WORKS CO., recently organized, has acquired the Iola, Kans., plant of United Iron Works for the manufacture of oil field supplies. General offices have been established in the Hunt building, Tusa, Oka. J. B. Kirk is president and D. C. Morrow, formerly president of United Iron Works, is vice president and general manager.

* * *

TRUSCON STEEL CO., Youngstown, O., has offered employes an opportunity to subscribe to 20,000 shares of common stock in the company. The offering is made at $40 per share, up to 20 per cent of the employe's earnings in 1928. The stock has a present market value of about $60 per share. Partial payment also is offered. The stock is restricted against sale outside the company for two years.

* * *

CAMPBELL, WYANT & CANNON Foundry Co., Muskegon, Mich., through its directors, has voted, subject to approval of stockholders, to acquire the entire outstanding stock of its subsidiary, the National Motor Castings Co., South Haven, Mich., 22,000 shares. It is stated that this is to be accomplished through issuance of 33,000 shares of authorized but unissued stock of the Campbell, Wyant & Cannon company, or in the ratio of one and one-half for one.

Men of Industry

(*Concluded from Page* 117)

Freyn company, returned July 2 from a 6-week business trip in England, in connection with consulting work for the Ford Motor Co.

* * *

George A. Pugh has been elected vice president in charge of all machinery sales of the Aetna Standard Engineering Co., Youngstown, O.

H. E. Melin has been appointed assistant manager of machinery sales.

M. D. Baughman has been appointed manager of the operating department, in charge of plants and production at Ellwood City, Pa., and Warren, O.

* * *

R. C. Brower, formerly general manager of the Timken Roller Bearing Service & Sales Co., Canton, O., has been promoted to be assistant secretary and assistant treasurer of the Timken Roller Bearing Co.

W. H. Richardson, formerly manager of the New York branch of the Timken Roller Bearing Service & Sales Co., has been made its general manager, with headquarters in Canton, to succeed Mr. Brower.

E. H. Austin, manager of the Kansas City branch, becomes New York manager, succeeding Mr. Richardson. L. J. Halderman, manager of the Atlanta, Ga., branch, has been made manager at Kansas City.

Parker T. Ancarrow, manager at Richmond, Va., becomes manager at Atlanta, and Stewart B. Ancarrow is now manager of the Richmond branch.

* * *

A. A. Stevenson retired July 1 as vice president of the Standard Steel Works Co., Burnham, Pa., ending 41 years continuous service. His first position, assumed Aug. 1, 1888, was as traveling engineer. In 1893 he became manager of the wheel department and five years later he was appointed engineer. He was made assistant superintendent in 1901, superintendent in 1903, vice president in 1908, vice president and engineer in 1917 and he has been vice president, in charge of manufacturing since 1920. Prior to going with the Standard company, he was draftsman from July, 1881, until March 1, 1886, for the Southwark Foundry & Machine Co., Philadelphia, rising to be drafting room foreman. He then became identified with the Cambria Steel Co., Johnstown, Pa., as draftsman in the chief engineer's office. In July, 1887, he was appointed forge and axle plant foreman and the following year he started his long identification with the Standard company.

Aviation Boosts Sales

Orders for steel building products received by the Truscon Steel Co., Youngstown, O., in the first half of 1929 total more than 33 per cent above the same period of 1928, with a steady upward trend at the end of the half, according to Julius Kahn, president. Large volumes of Truscon steel products are going into airplane hangars, according to the report. Orders for airport structures include hangar doors, windows and roofs, complete hangars, floodlights towers and reinforcing steel.

Obituaries

RALPH W. CLARK, 45, vice president and general sales agent of the Chateaugay Ore & Iron Co., the Hudson Coal Co. and the Chazy Marble Lime Co., died at a hospital in Scranton, Pa., July 4, following an illness of three weeks with typhoid fever. Mr. Clark was widely known in the merchant pig iron business. Born at Chicago, he began his career 28 years ago in the Chicago office of Rogers, Brown & Co. Later he was transferred to Buffalo, then to Boston and later to New York, where he spent 15 years with Rogers, Brown & Co. In 1922 he left to become New York district sales agent for Pilling & Co., later being elected vice president and a director of that company. Last September Mr. Clark resigned from Pilling & Co. to become vice president and general sales agent of the Hudson Coal Co. Since Jan. 1 he also has served in a similar capacity with the Chateaugay and Chazy companies.

* * *

Edward L. Frisbie, 74, vice president and director of the American Brass Co., Waterbury, Conn., died July 3, at Middlebury, Conn.

* * *

Irving J. Budlong, 60, former head of the American Woodworking Machinery Co., and vice president of the Merchon Mfg. Co., Saginaw, Mich., died June 17 at his home in that city.

* * *

Franklin W. Mahar, 49, Plainfield, N. J., head of the Mahar Machinery Co., New York, died July 4 at Columbus, O. He became ill June 30 while on a business trip to Columbus.

* * *

Edward B. Thornton, president, Ottawa Silica Co., Ottawa, Ill., died June 28 at his home in Bedford, Ind. Mr. Thornton was the founder of the Ottawa Silica Co. and had served as its president since its organization.

* * *

William M. Tobias, 64, former general purchasing agent of the Bethlehem Steel Corp., died July 6 at Lake Placid, N. Y., where he was spending the summer, death being due to apoplexy.

* * *

Edward J. Carnes, president of the E. J. Carnes Co., Medford, Mass., steel erector, died at his home there June 30. Prior to the organization of his company, he was for many years in charge of erection for the New England Structural Steel Co.

* * *

Morris L. Fox, 64, founder of the Racine Iron & Metal Co., and the Pioneer Iron & Coal Co., Racine, Wis., and well known in the scrap metal trade of the Middle West, died June 28. He had been inactive for the past six years due to failing health.

* * *

Charles M. Stone, 73, one of the founders of Crandall, Stone & Co., died at his home, Binghamton, N. Y., July 2, of heart disease. The firm, now a division of the Brewer, Tichner Corp., maker of automobile supplies, at one time was one of the largest manufacturers of carriage hardware.

* * *

Roger C. Barnard, 47, controller of the Erskine-Danforth Corp., Stamford, Conn., died at his home in that city July 5. Mr. Barnard was a native of West Newton, Mass., a graduate of Harvard in 1902 and was formerly connected with several New York engineering firms. He was a member of the Harvard Engineering society and the Harvard club, New York.

* * *

William S. Andrews, 82, oldest employe of the General Electric Co., Schenectady, N. Y., died July 1 in the golden jubilee year of his connection with the electrical industry. That company recognized his service as unbroken from the day he entered Thomas Edison's employ at Menlo Park in 1879, although the General Electric Co. did not come into existence until later.

British Steel Outlook Improving

Government Speech Indicates Better Demands from Railroads—Pig Iron Scarce at Middlesbrough

European Headquarters,
IRON TRADE REVIEW,
Caxton House, Westminster, S. W.1

LONDON, July 9.—(*By Radio*)—Scarcity of pig iron at Middlesbrough, referred to locally as a "famine," has caused a reduction of exports, and the reappearance of foreign iron. Pig iron exports from the port in June amounted to 16,697 tons, compared with 21,057 tons in May. The Stanton Iron works has placed an order for an additional blast furnace stack. East coast hematite is firm. The Great Western railroad has contracted for 100 locomotives, while orders have been received from South Africa for 150 cattle cars. The government speech has raised hopes for rehabilitation of the railroads and consequent expansion of demand for steel railroad ties. Improved demand for plates is leading to resumption at several mills. Collieries are ordering steel for props. The market for galvanized sheets is dull. Tin plate is easy.

Belgian markets are weak, except for plates and beams, according to a dispatch today from Brussels. The domestic hoop syndicate has been discontinued. Domestic business in France is satisfactory; exports are quieter. Berlin reports production stimulated by increasing export sales.

British Pig Iron Is Scarce and Prices Rising

BIRMINGHAM, Eng., June 28.—The feature of the British market is the shortage and dearness of pig iron. In the Midlands another meeting of producers was held yesterday when it was decided not to increase prices, although it was readily admitted in the trade that prevailing quotations are substantially above the minimums laid down. It came as a surprise on the Birmingham exchange to find that the Central Pig-iron Producers' association, as it is now styled, had not definitely increased quotations. Most makers have sold their output for three or four months and have no iron to sell, but

Sterling £4.85

merchants are getting hold of supplies that are available and making up to some extent for the slack time they have experienced in pig iron for many months.

In Middlesbrough the position is similar. Iron is extremely scarce, and with little hope of easing owing to the difficulty of securing adequate supplies of ironstone and coke. Sufficient coke has been bought to keep present furnaces in blast but the output of coke has not increased in proportion to the rekindling of furnaces. Makers of Middlesbrough pig have no iron to offer before autumn and parcels that merchants have on offer are based on the quotation of £3 12s 6d ($17.58). It seems certain that a much larger output would find ready sale and the shortage reacts into steel, so that some local steelworks are placing orders in other areas for slab steel. Hematite is more plentiful but prices are advancing, mixed numbers now costing £3 14s 6d ($18.06).

The Middlesbrough steelworks are busier than for some time. Demand for sections and plates for shipbuild-

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, July 8	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable		£ s d		£ s d		£ s d		£ s d
PIG IRON								
Foundry No. 3, Silicon 2.50-3.00	$17.82	3 13 6*	$17.46	3 12 0	$17.46	3 12 0†	$17.46	3 12 0
Basic	16.61	3 8 6	17.10	3 10 6	17.10	3 10 6	16.73	3 9 0
Basic-bessemer	17.58	3 12 6†	17.10	3 10 6	17.10	3 10 6	16.73	3 9 0
Hematite, Phosphorus 0.02-0.05	17.95	3 14 0	24.63	630*	.....	.....	17.70	3 13 0
SEMIFINISHED STEEL								
Billets	$32.13	6 12 6	$25.77	5 6 3	$25.77	5 6 3	$26.19	5 8 0
Wire rods	41.83	8 12 6	30.92	6 7 6	30.92	6 7 6	30.92	6 7 6
FINISHED STEEL								
Standard rails	$37.59	7 15 0	$31.53	6 10 0	$31.53	6 10 0	$31.53	6 10 0
Merchant bars	1.79c	8 5 0	1.28c	5 16 3	1.28c	5 16 3	1.31c	5 19 0
Structural shapes	1.60c	7 7 6	1.15c	5 4 9	1.15c	5 4 9	1.14c	5 4 0
Plates, ship, bridge and tank	1.76c	8 2 6	1.41c	6 7 9	1.41c	6 7 9	1.40c	6 7 0
Sheets, black, 24 gage	2.17c	10 0 0	2.37c	10 15 0	2.37c	10 15 0	2.33c	10 12 0
Sheets, galvanized, 24 gage, corrugated	2.96c	13 12 6	3.01c	13 13 9	3.01c	13 13 9	3.08c	14 0 0
Bands and strips	2.17c	10 0 0	1.31c	5 19 6	1.31c	5 19 6	1.40c	6 7 6
Plain wire, base	2.06c	9 10 0	1.65c	7 10 0	1.65c	7 10 0	1.69c	7 14 0
Galvanized wire, base	2.93c	13 10 0	2.12c	9 12 6	2.12c	9 12 6	2.13c	9 14 0
Wire nails, base	2.39c	11 0 0	1.76c	8 0 0	1.76c	8 0 0	1.79c	8 3 0
Tin plate, base box 108 pounds	$ 4.43	0 18 3	.....	.....	.....	.....	$ 8.97	1 17 0

*Francs

Domestic Prices at Works or Furnace—Last Reported			Francs		Francs		Marks	
Foundry No. 3 Pig Iron, Silicon 2.50-3.00	$17.58	3 12 6	$18.57	475(2)	$17.24	620	$20.25	85
Basic pig iron	16.61	3 8 6	19.94	510(1)	17.10	615	21.68	91
Furnace coke	3.64	0 15 0	6.26	160	5.84	210	5.12	21.50
Billets	32.13	6 12 6	24.24	620	25.72	925	28.82	121
Standard rails	1.79c	8 5 0	1.46c	810	1.63c	1,250	1.51c	140
Merchant bars	1.84c	8 10 0	1.34c	745	1.37c	1,055	1.52c	141
Shapes	1.76c	8 2 6	1.26c	700	1.23c	945	1.49c	138
Plates, ship, bridge and tank	1.93c	8 17 6‡	1.54c	855	1.46c	1,125	1.71c	158
Sheets, black, 24-gage	2.28c	10 10 0	2.92c	1,620	2.73c	2,100	2.43c	225
Sheets, galvanized 24 gage, corrugated	2.96c	13 12 6	3.68c	2,045	3.84c	2,950	3.78c	350
Plain wire	2.06c	9 10 0	1.94c	1,075	2.15c	1,650	2.48c	230
Bands and Strips	2.17c	10 0 0	1.51c	840	1.69c	1,300	1.77c	164

*Middlesbrough; †Scotch foundry iron; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 15s 0d ($3.64) f. o. b. Ferromanganese £21 13s. 0d ($105.00) delivered Atlantic seaboard, duty-paid. German ferromanganese £15 0s 0d ($72.75) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are or basic-bessemer steel.

ing has improved and the constructional trade in some parts of the country is active. In Birmingham, unfortunately, this is not the case. Birmingham engineers say that all contracts are small and with so many firms in the trade hungry for work at any price profits are almost eliminated.

Continental competition is confined to certain products sufficiently cheap when delivered here to be attractive. The tables have been turned at Middlesbrough where instead of heavy tonnages of pig iron coming from the Continent, consumers in France, Belgium and Germany are buying freely from English furnaces. Birmingham merchants who have been doing a good trade in continental tube strip find their business has dwindled this week on account of a rise in this foreign steel which sells today at £7 15s ($37.59), delivered Black Country. English strip can be had for £8 ($38.80) so that there is practically no advantage. Belgian No. 3 iron costs from £5 18s ($28.62) to £5 19s 6d ($28.98) f.o.b. Antwerp and fair quantities are being shipped to Black Country users. Billets are a slow market as the difference in price is too small to be of much interest to Midland consumers.

Scarcity of basic pig iron is closely related to the scramble for heavy steel scrap. Merchants have reverted to £4 ($19.40), delivered South Wales, an increase of 2s 6d ($0.60) on the week. Last week there were signs that the position was easier but it is now obvious that there has been no collapse, with material just as difficult to get hold of.

The position in South Staffordshire iron continues healthy. The best quality of iron, known here as marked bars, has sold for the last fifteen months at £12 ($58.20) per ton. In the next quality of finished iron, crown bars, there is also a great deal of activity which has enabled the makers to stand out for a minimum of £10 ($48.50) per ton whereas in districts outside the Black Country the same iron can be bought for slightly less.

The tone of the market in tin plate is sufficiently strong to enable makers to keep prices at 18s 6d ($4.48) and also some revival of buying for export, especially to the Continent is a feature of this week's business. Home consumers apparently are waiting for the turn of events in relation to the proposed regulation of tin production.

German Producers Claim Entente Fails To Yield Expected Result

BERLIN, June 28.—(*European Staff Service*)—German iron and steel industrialists at the annual meeting of their association claimed the association's experiences with the European raw steel association have not had the expected result. The German industry is therefore declining a continuation of the European association unless equal treatment of all countries concerned is to take place. The international rail, wire rod, and pipe associations were claimed to be models which should be adapted to other manufacturers. The principal difficulty for the prolongation of the European association remains the continuation of the German domestic association, which, it is stated, is desired by practically all German producers. Whether these difficulties will be surmounted remains to be seen, but it is believed in well-informed quarters that these endeavors will be successful. In the meantime the European association has been prolonged and the German quota has been raised.

While efforts to control the domestic sheet market, the only product at present not syndicated, continue, the Dortmund scrap-buying agency, established by a number of the big west German smelters, has been dissolved, effective July 1. Melters now are free to buy scrap without any prescribed prices, which already has resulted in a heavy increase of scrap quotations. As to the ore situation, smelters have almost fully covered their needs for 1930. Swedish ores have been bought at practically the same rate as last year, while South Spanish hematite ores have been taken in fair lots, several hundred thousand tons having been bought.

Export business has revived of late, structural shapes in particular being asked for. Quotations have slightly hardened. The principal buyers have been South America and the Scandinavian States. Merchant bars are not sold at below £6 ($29.10), as recently some better foreign orders were booked. Structural shapes have had a firm tendency at about £5 4s ($25.21). Plates have been slightly easier at £6 6s ($30.54). Semifinished goods have been asked for at a better rate, but turnovers have not been considerable.

In the domestic market, business has remained quiet. In semifinished the demand has not been active. Structural shapes have continued to suffer as a result of unsatisfactory building activity. Needs of shipyards also are limited, but it is hoped that wagonmakers will become better buyers, as a credit of about 100,000,000 marks to the railroads will enable them to make new purchases of wagons. Merchant bars are dull, and the demand for bands and universal iron also is limited.

French Steel Market Faces Less Favorable Conditions for Summer

Franc—3.91c

PARIS, June 28.—(*European Staff Service*)—There is a small volume of business in the French iron and steel market, and prospects generally are regarded as not very favorable, the result of the usual contraction of business during the summer. Fortunately, the steady flow of orders during late 1928 and early in the present year enables plants to work at full capacity.

The cost of living increased in May and reached 547, against 531 for the last three months of 1928. It is likely that it will reach 600 during next winter. The consequences of this increase are serious, for it reduces French buying power and will justify an increase in salaries and an increase in cost of production. All these signs are indications of an economic crisis, which many regard as near, and they justify their opinion by the fact that some banks were not in a good position at the end of last month.

The past week has been the most important one of the month, as meetings of the various sales organizations have been held. The conclusion for each of them is the same, that actual prices have been maintained, and directors insist that orders will not be so important as during the first months of the year. The meeting of the international wire rod sales organization was held at the end of May. Nothing important was stated, and another meeting will take place at Brussels at the beginning of July. The international steel entente held its meeting on June 13. The program for the next three months has been increased by 1,000,000 tons, but this is a preliminary report, and more accurate information will be available later.

The shortage of pig iron has abated. Prices in semifinished products remain firm, but unchanged. Steelworks in the north and in the east of France still are actively engaged in production of finished bars and structural sections, but new orders are scarce. Prices remain the same, but it is easy to obtain concessions on good specifications. The plate and sheet market is satisfactory and firm, as sales organization for these commodities is practically established, and it is said that the comptoir will be near to commencing operations July 1. Consequently, prices of heavy plates have increased by 30 francs ($1.18) per ton.

The wire products market is not good and orders for wire rod are not important, and it is possible that the wire rod comptoir will not be in a position to maintain production at 110 per cent.

Sheet and Tin Plate Mill Wages Advanced

Sheet and tin mill wages will be advanced during July and August for the first time since January, 1928. The average sales price of Nos. 26, 27 and 28 gage black sheets in May and June was 3.05c, as reported by representatives of the independent sheet and tin plate manufacturers and of the Amalgamated Association of Iron, Steel and Tin Workers at their meeting in Youngstown last week. This compares with 3.00c, the bimonthly average since the November-December period of 1928. Wages advance 1½ per cent to 27 per cent above base. Following are comparisons of price averages for the periods designated:

May-June	3.05c	+1.5 per cent
March-April	3.00c	unchanged
Jan.-Feb., 1929	3.00c	unchanged
Nov.-Dec.	3.00c	unchanged
Sept.-Oct.	3.00c	unchanged
July-Aug.	3.00c	unchanged
May-June	3.00c	unchanged
March-April	3.00c	unchanged
Jan.-Feb., 1928	3.00c	unchanged
Nov.-Dec.	3.00c	—3 per cent
Sept.-Oct.	3.10c	+3 per cent
July-Aug.	3.00c	unchanged
May-June	3.00c	unchanged
March-April, 1927	3.00c	—3 per cent

Son Carrying On Work

William H. Jefferys, son of the late William M. Jefferys, director and superintendent of the Hanging Rock Iron Co., and superintendent of the Union Iron Furnace, Ironton, O., who died June 17, is taking up his father's work in handling properties of the Hanging Rock company which were purchased April, 1928. The Hanging Rock company is in liquidation and a year ago sold to the elder Mr. Jefferys its houses and land, consisting of about 8000 acres rich in coal, timber and clay.

Drawbacks Are Granted

Washington, July 9.—The treasury department has announced allowance of drawback on high speed steel manufactured by the Vanadium-Alloys Steel Co., Latrobe, Pa., with use of ferrotungsten produced from imported tungsten ores or concentrates by firms operating under drawback regulations.

The department has also announced drawback allowance on ferrotungsten manufactured by the York Metal & Alloys Co., York, Pa., with use of imported tungsten ore or concentrates.

Light Committee Named

On the general committee named to take care of light's golden jubilee, the world wide celebration of the fiftieth anniversary of Thomas A. Edison's incandescent lamp, are Charles M. Schwab, Henry Ford, Owen D. Young, Daniel Willard, Andrew W. Mellon, Walter P. Chrysler, Gen. William A. Atterbury, and P. E. Crowley. Light festivals in nearly all parts of the country in the summer and fall have been planned. An analysis of the value of good lighting to various industrial processes will be made.

Production Index Rises

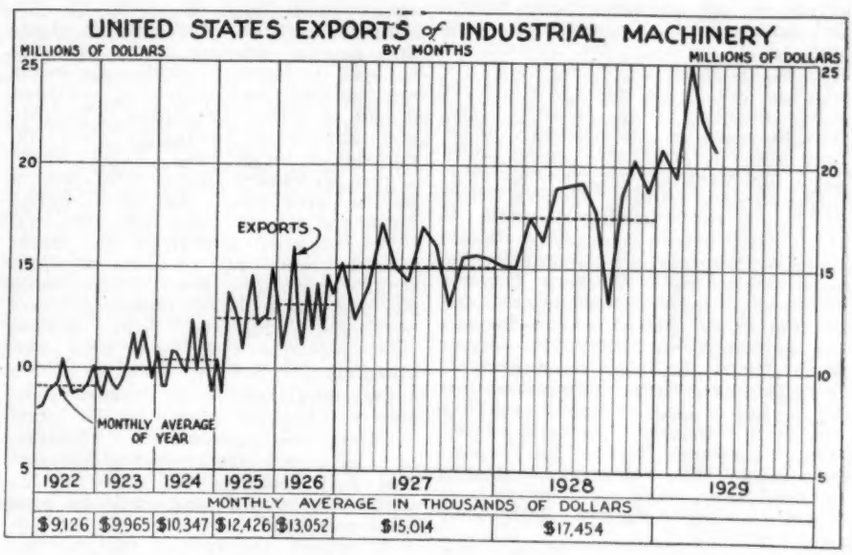
Washington, July 9.—May iron and steel production index number was 145, compared with 135 for April and 116 for May, 1928 taking 1923-1925 at 100, according to the department of commerce, Washington. It reports that the nonferrous May production index was 137, compared with 137 for April and 111 for last May.

May unfilled orders index number for structural steel was 87, compared with 92 for April and 72 for May, 1928.

Probe Dumping of Pipe

Washington, July 9.—It has just become known that complaint has been filed with the customs bureau, treasury department, alleging the dumping of cast iron pipe on the American market from France. A preliminary investigation is being begun in connection with the complaint.

Industrial Machinery Exports Decline but Exceed 1928 Record



EXPORTS of industrial machinery from the United States during May, totaling $20,887,000, were substantially in excess of those for the corresponding month of 1928, but showed a decline of $1,409,000 under April, 1929, and of $4,164,000 under the high record reached in March, 1920, according to figures of the industrial machinery division of the department of commerce. The downward trend indicated has no particular significance, however, since such fluctuations are to be expected and the general movement is upward. Of greater interest, as covering a longer period, is the fact that exports of industrial machinery for the first five months of 1929 totaled over $110,000,000, exceeding those for the same period of 1928 by $26,023,000. Thus added impetus is given to the steady upward march of American industrial machinery exports, which has been one of the prominent features of the trade for the last seven years.

Among the principal items, exports of well and refinery machinery showed the most striking gains in the first five months of 1929 as compared with the same period of 1928. Metalworking machinery, however, was a close second, and notable increases occurred for internal combustion engines, mining and quarrying machinery, power pumps and construction and conveying machinery. Lesser gains were registered by textile, sewing and shoe machinery, and water wheels and water turbines was the only item which showed a noticeable decline from the previous figure.

Machinery

No Indications of Any Sharp Let-Down in Buying—Aluminum Co. Will Have Large List for Machine Shop at New Kensington

DESPITE some slight recession machine tool buying continues good for this time of the year, inquiry being spread over a wide range of users. Some reductions in delivery have been made on several lines of machinery, but for standard machines six to eight weeks still holds in the New York district. Equipment for the machine shop of the new plant of the Aluminum Co. of America at New Kensington, Pa., will involve about $200,000, the plant being under construction at present. The third quarter list of the Westinghouse Electric & Mfg. Co., is a large item now pending. A. O. Smith Corp., Milwaukee, has started purchasing on its program. Tool and die plants and general machine shops are active buyers. Grinding machinery is moving well.

New York, July 9.—Machine tool buying continues to hold to recent high levels with few indications of a let-down. Inquiry holds brisk and buying is well spread, covering a wide range. Some builders are making headway in reducing delivery on several lines of machinery, but as a rule, six to eight weeks holds for most standard machines. Electrical equipment manufacturers are good buyers, as are airplane engine manufacturers. While there are no new large lists pending, the volume on inquiry, including individual tools, remains high. Demand for radial drills, turret lathes, shapers and grinding machinery is especially brisk. Four shapers and three lathes were taken this week by the Sikorsky Mfg. Corp., airplane builder. General Electric has a list involving 20 tools on which early action is expected. Westinghouse lamp is also inquiring for seven tools while Western Electric continues to purchase equipment for its Baltimore plant. The demand for grinding machinery is heavy. Small tools are also moving well. There has been some improvement in the buying of textile machinery. Except in this industry, the bulk of the buying continues to be for expansions rather than replacements. Heavier machinery, such as punches and shears, is fairly active with well spread demand.

Worcester, Mass., July 9.—Machine tool inquiry in this district showed a slight recession, the first in months, but nothing viewed as affecting the general trend which calls for peak production. Many small tool plants find their stocks at low ebb following the continued demand that has been placed on them for several months and production must remain high to produce replacements. Grinding machines continue in heavy demand and wheels production remains normal. Third quarter outlook is for the same heavy output that has characterized the market so far this year.

Pittsburgh, July 9.—Machine tool awards dropped off recently although a substantial volume of business is pending in the market and sellers are figuring on a fairly large number of jobs. The largest items in work now pending include the third quarter list of the Westinghouse Electric & Mfg. Co. and a recent inquiry by the Aluminum Co. of America for equipment for its new machine shop at New Kensington. This plant now is being built. Equipment involves the expenditure of about $200,000. A large number of cranes remain pending, including work for the National Tube Co. here and the Great Lakes Steel Corp. plant.

Chicago, July 9.—Moderate inquiry for machine tools from widely scattered sources is reported, and the volume of sales, while 20 to 25 per cent under May, is close to last month's business. Tool and die plants and general machine shops continue to lead as buyers. Numerous orders are pending, and billing of outgoing orders is active. Southern Wisconsin and Milwaukee territories have important inquiries out. A. O. Smith Corp., Milwaukee, has started buying on its program. The farm implement and tractor lines are quiet, but it is indicated several of the larger tractor plants may proceed on their inquiries within a few weeks. Santa Fe and Rock Island railroads have purchased additional tools against their inquiries that have been outstanding for several months.

Cleveland, July 9.—A general recession in machine tool business characterizes the market. A manufacturer of turret lathes reports, however, that July bookings will make up entirely the 10 per cent drop in June sales compared with May. Demand is well spread throughout the district, with the exception of the automotive industry which appears to be in the doldrums right at present. General opinion is that this condition will be thrown off shortly. No further action has been taken on the large list of tools for the Union Terminals Co. Reconditioned machinery is holding up well. A few price advances have been reported. Accessory sales are good.

Fuel briquets are produced from coal washings, screenings, fines from breakage in transit and culm banks, all materials otherwise wasted.

CRANE ORDERS PLACED

Twelve overhead electric traveling cranes ranging from 5 to 10 tons in capacity for Libby Owens Glass Co., Toledo, O., to Cleveland Crane & Engineering Co.

Four 1½-yard steam crawler shovels for Di Marco-Reimann Co., New York, to Bucyrus Co.

Two 15-ton crawler cranes for James Stewart Co., New York, to Forsythe Bros.

15-ton handpower crane for Henry Doherty Co. to Shepard Niles Crane & Hoist Corp.

Metals Institute Plans Meeting in Germany

The forthcoming congress of metallurgists in Dusseldorf, Germany, Sept. 9-12 promises to be unusually interesting. Already nearly 200 persons from all over Europe, and some from America, have indicated their intention to participate. The congress will comprise the presentation and discussion of about 15 scientific and practical papers relating to metallurgical work; visits to works in or near Dusseldorf and Berlin; and social functions.

The congress is sponsored by the British Institute of Metals. G. Shaw Scott, 36 Victoria street, Westminster, London, S. W. 1., is secretary.

Locomotive Sales Off

Washington, July 9.—Although June shipments of steam and electric locomotives show a decrease from May, it was the second best month of the year. Comparing the first half with the same period of 1928 a slight increase is noted, according to the department of commerce comparison, which follows:

Year and Month	Shipments Domestic Total	Steam	Electric	Unfilled orders Domestic Total	Steam	Electric
1928						
June	51	39	11	201	109	87
Total (6 mos.)	314	215	76	.....	.....	.....
July	46	19	5	198	98	59
Aug.	34	23	4	204	135	26
Sept.	41	28	2	178	118	27
Oct.	36	26	.....	170	113	29
Nov.	35	20	1	152	104	31
Dec.	44	36	4	282	238	27
(1928)	550	367	92	.....	.....	.....
1929						
Jan.	23	6	6	278	251	21
Feb.	23	20	1	339	301	20
March	35	31	4	488	419	24
April	61	57	2	495	419	24
May	99	92	2	444	362	22
June	78	58	1	552	489	21
Total (6 mos.)	319	264	16	.....	.....	.....

Perfect Circle Co., Newcastle, Ind., produced 5,015,000 piston rings in May, a record.

CONSTRUCTION *and* ENTERPRISE

Concise Timely Business Building Opportunities from Field of Industry

North Atlantic

BALTIMORE—W. A. Fingles Inc., 29 South Howard street, sheet metal worker, has plans for construction of a 2-story plant addition. E. G. Blanke, Professional building, is architect.

HAGERSTOWN, MD.—Air Propeller Corp., recently organized, will manufacture steel and wood propellers, according to John Squires, president of the Kreider-Reisner Aircraft Corp., here.

WATERTOWN, MASS.—Town water commissioners are taking bids for pumping equipment, special castings, valve boxes, etc., for waterworks.

WAYLAND, MASS.—Board of selectmen is taking bids for a 1-story service and repair garage estimated to cost about $40,000. J. R. Worcester & Co., 79 Milk street, Boston, is engineer.

ASBURY PARK, N. J.—City has awarded contract for a 2-story power plant to De-Rise Bros., 551 Fifth avenue New York. Estimated cost about $400,000.

JERSEY CITY, N. J.—New Jersey Art Foundry, 433 Tonnele avenue, has plans for construction of a plant addition costing about $30,000. L. Feinen, 3697 Boulevard, Jersey City, is architect.

MOUNT HOLLY, N. J.—Victor Metal Aircraft Corp., Mount Holly, is ready to break ground for its temporary plant near the Mount Holly airport.

NEWARK, N. J.—Guilbert & Betelle, architects, 20 Branford place, will receive bids about July 15, for a hospital including a power plant for the Newark municipal hospital.

NEWARK, N. J.—City has started construction of a hangar, 200 x 500 feet, to be leased to the Colonial Airways.

PATERSON, N. J.—Watson-Flagg Engineering Co. Inc., machinery manufacturer, advises it has awarded contract for a plant addition to the John W. Ferguson Co.

PERTH AMBOY, N. J.—Standard Underground Cable Co., 26 Washington street, has awarded contract for constructing a 3-story plant addition to the Public Service Production Co., 80 Park place, Newark, N. J. Estimated cost about $200,000.

PINE VALLEY, N. J.—New Jersey Air Transportation Co. will build an assembly plant here.

TRENTON, N. J.—J. A. Roebling's Sons Co., Canal street, has awarded contract for a 1-story plant addition to J. W. Ferguson Co., 152 Market street, Paterson, N. J. Estimated cost about $115,000.

CONKLINGVILLE, N. Y.—New York Power & Light Corp. has awarded contract for construction of a hydroelectric station here to Stevens & Wood, Inc., 120 Broadway, New York.

NEW YORK—Superior Fireproof Door & Sash Co., 1811 Carter avenue, plans building a 2-story plant addition, 100 x 200 feet. H. Ginsberg, 205 West Forty-second street, is architect.

SHERMAN, N. Y..—H. Buss & Son have purchased the former plant of the Sherman Electric Light & Power Co. After alterations they will establish a garage and service station.

NEW YORK—G. F. Machine Mfg. Corp., 130 Bleeker street, recently incorporated to manufacture iron lifters, advises it is in the market for gray iron castings, electric switches, wire, etc. (Noted June 27.)

NEW YORK—New York Central railroad, 466 Lexington avenue, J. B. Freeman, chief engineer, has awarded contract for a 7-story service garage, 200 x 200 feet, to the Turner Construction Co., Graybar building, New York. (Noted May 30.)

NEW YORK—Continental Can Co., Pershing Square building, plans to spend about $5,000,000 on new construction and improvements to its plants this year. Plants where additions or improvements will be made are at San Jose, Calif.; Seattle; Clearing, Ill.; Baltimore; Canonsburg, Pa., and Syracuse, N. Y.

SYRACUSE, N. Y.—Prosperity Co., manufacturer of pressing machines, has awarded contract for a 1-story plant addition to Dawson Bros., Union building, Syracuse.

CHESTER, PA.—Philadelphia Electric Co., Ninth and Sansom streets, Philadelphia, has awarded contract for a 1-story gas manufacturing plant to United Engineers & Constructors Inc., 112 Broad street, Philadelphia.

FRANKLIN, PA.—City is having plans prepared for a 1-story filtration plant. Morris Knowles, Westinghouse building, Pittsburgh, is engineer.

HARRISBURG, PA.—Pennsylvania railroad, Broad street station, Philadelphia, plans construction of a bus terminal here. The building, to be erected at Seventh and Reily streets, will have repair facilities.

LOCK HAVEN, PA.—Sylvania Products Co., Emporium, Pa., has leased space in a building here, where after alterations and improvements it will install equipment to manufacture a new kind of radio tube.

MILLERSBURG, PA.—Millersburg Gas Corp. has plans for construction of a new artificial gas plant. Estimated to cost about $160,000 with equipment.

PHILLIPSBURG, PA.—Ingersoll-Rand Co., 11 Broadway, New York, has approved plans for an addition to the Cameron Pump Works, a subsidiary, here. The addition will be, 80 x 220 feet. A 2-story office building, 40 x 140 feet, will also be constructed. It is estimated the improvements with equipment will total about $500,000.

Resale News

STOCK and fixtures of the South Shore Mfg. Co., Abbey road, Elyria, O., will be sold at bankrupt auction July 11, by Gus Rosen, auctioneer. The material will be offered in its entirety and also in single lots. The sale will include lathes, milling machine, punch press, cupola, lower, motors, pattern and matchplate equipment, and office equipment. Considerable finished product also is for sale.

Sales Calendar

July 11—Auction of stock and fixtures of South Shore Mfg. Co., Elyria, O.

Western States

LOS ANGELES—Standard Auto Body Works, 1501 South Central avenue, has plans for construction of a 1-story plant addition, 100 x 140 feet.

LONG BEACH, CALIF.—Detroit Aircraft Corp., Detroit, has acquired a 30-acre tract here for an airport. Establishment of plant is expected to be announced shortly.

SALEM, OREG.—Oregon-Washingon Water Service Co. announces extension and improvements to cost $228,000, to be executed this year.

HYRUM, UTAH—City council is taking bids

for a hydroelectric plant to cost about $70,000. J. L. Anderson, Hyrum, is engineer. (Noted May 16.)

BELLINGHAM, WASH.—Puget Sound Power & Light Co. has approved plans for a proposed 1-story service building and a 3-story warehouse to be built here at a cost of $175,000.

SEATTLE—Paramount Briquetting Co., Burke building, will immediately start work on a plant at 1721 Northlake avenue.

SPOKANE—Washington Water Power Co. plans erection of a substation in the Hollywood district.

SUMNER, WASH.—Fiberboard Products Co. Inc. is erecting an addition to the boiler house to provide for increased power. Modern machinery will be installed.

VANCOUVER, WASH.—Inland Empire Power & Light Co., Portland, Oreg., G. W. Talbot, president, Gasco building, has been granted a permit to construct two power plants on the Lewis river, near here. Estimated cost $12,000,000. (Noted June 6.)

WINLOCK, WASH.—E. V. Lyttaker & Son are erecting a welding and blacksmithing shop, 35 x 50 feet.

CHICAGO—J. H. Murphy, 1525 Kingsbury avenue, care W. G. Uffendell architect, 39 South State street, has been issued permit to construct a 2-story power plant, 65 x 123 feet.

CHICAGO—Jensen Radio Mfg. Co., 6601 South Laramie street, has purchased about 43,000 square feet from the Industrial Clearing district and will erect a plant addition which will double the present floor space. Foltz & Co., 510 North Dearborn street, are architects.

CHICAGO—Carlson Forging Co., 727 Fulton avenue, is erecting a plant at 1052-60 North Kolmar avenue, costing about $75,000. G. Kehl Sons, 1225 North Maplewood avenue, have the general contract.

ROCKFORD, ILL.—Monarch Aircraft Co., Brown building, advises it has construction under way of the first unit of a plant to manufacture airplanes.

VANDALIA, ILL.—Chamber of commerce is negotiating with the Comandor Furnace Co., Niantic, Ill., to locate a manufacturing plant here.

ANDERSON, IND.—Philip Cook & Sons Co., operating a die and machine shop here, has plans for expansion.

EAST CHICAGO, IND.—City is having a survey made for the proposed municipally owned electric power plant. It is expected the work will be completed within 60 days.

MADISON, IND.—Madison Precision Tool Co., East Main street, has leased a plant building for additional manufacturing purposes. Machinery and equipment will be installed and plant in operation within 60 days, according to F. L. Atwood, manager. A steam heating plant will be installed.

MUNCIE, IND.—Glascock Bros. Mfg. Co., manufacturer of refrigerators, bottle coolers, etc., is taking bids for construction of a 1-story plant addition.

MUNCIE, IND.—Glascock Bros. Mfg. Co., 1515 West Fifteenth street, manufacturer of refrigerators and bottle coolers, etc., advises it has awarded a contract for a plant addition, which will give it an additional 25,000 square feet of floor space to George W. Ewing & Sons, Muncie.

SOUTH BEND, IND.—D. C. Leer, 1222 Lincoln Way east, has awarded contract for a machine shop and garage, 66 x 100 feet. Estimated cost about $40,000.

DETROIT—Detroit Steel Products Co., 2250 East Grand boulevard, advises it is having plans prepared for a plant addition to be constructed on a 40-acre tract recently purchased. The first unit will have about 125,000 square feet of floor space. Complete overhead crane equipment will be used in storage bins and other places where necessary.

FLINT, MICH.—Chevrolet Motor Co. has awarded contract for a group of plant buildings here to W. E. Wood & Co., Union Trust building, Detroit.

GRAND HAVEN, MICH.—Bastian-Blessing Co., manufacturer of soda fountains, fixtures and welding apparatus, will build a plant addition, containing about 13,400 square feet, at its plant here.

PLYMOUTH, MICH.—Albert Kahn, architect, Marquette building, Detroit, is preparing plans for the Detroit house of correction for a group of buildings here including a power house.

APPLE CREEK, O.—Department of welfare, care H. H. Griswold director, Ninth and Oak street, Columbus, O., will receive bids until July 18, for a group of buildings including a power plant, for the institute of feeble minded here. (Noted Dec. 20.)

CLEVELAND—General Brass & Copper Co., 4610 Wallingford court, has awarded contract for a warehouse and plant addition to Tepper & Limowitz, 3468 East 123rd street.

CLEVELAND—Armington Engineering Co., Chardon road and Nickel Plate railroad, has awarded contract to the Austin Co., 16112 Euclid avenue, for a steel addition, 50 x 120 feet, to be used for fabricating electric cranes.

CLEVELAND—City, care Ralph L. Harding, director of public service, city hall, has plans for construction of a garage repair shop estimated to cost about $100,000. Herman Kregelius, 604 city hall, is architect.

CLEVELAND—Austin Co., 16112 Euclid avenue, will start construction of a hangar, 120 x 200 feet, at the Cleveland Airport. The hangar is the first of a chain to be built at leading airports and leased to transport operators by the Austin Co., according to W. J. Austn, president.

COLUMBUS, O.—Ohio Motor Wheel Parts Corp., which recently established temporary offices at 44 East Broad street, will manufacture wheels and accessories for airplanes and automobiles. A manufacturing plant with about 75,000 feet of working space has been tentatively selected, with several acres adjacent to the plant for expansion. (Noted June 6.)

EAST LIVERPOOL, O.—Patterson Steel Products Co., recently organized, has awarded contracts for a new plant costing about $150,000, to be built on a 2-acre tract. (Noted June 6.)

SPRINGFIELD, O.—Springfield Mfg. Co., Bechtle and Columbia streets, manufacturer of ring gears, plans installation of new machinery for increased output.

SPRINGFIELD, O.—Ohio Steel Foundry Co., Lagonda and Gothic streets, plans construction of a plant addition. Estimated cost about $100,000.

SPRINGFIELD, O.—Safety Grinding Co., Larch street, plans additions within the next few weeks, according to Charles Gwyn, president. A machine shop addition, 50 x 80 feet, is now under construction.

WARREN, O.—An iron and steel scrap plant is being installed here by Harry Knofsky, at the plant formerly occupied by the General-American Tank Car Corp. on Griswold street. Additions and rearrangements of the plant with installation of machinery are being made.

YOUNGSTOWN, O.—Youngstown Radio Lamp & Novelty Co., Scienceville road, has plans for building a one and 2-story plant building. Zenk & Campbell, 120 West Wood street, are architects.

NEW CUMBERLAND, W. VA.—Hancock Mfg. Co., recently incorporated to manufacture steel stampings, etc., will build a plant, 50 x 200 feet, to cost about $75,000. (Noted June 27.)

JANESVILLE, WIS.—Northern Conveyor & Mfg. Co., West State street, has awarded contracts for the construction of a fireproof shop extension, 40 x 157 feet. G. R. Whitnall is secretary and treasurer.

West Central

FT. DODGE, IOWA—City, care L. C. Pray, superintendent of waterworks, is taking bids for a 1-story waterworks plant. Estimated cost about $175,000.

MARSHALLTOWN, IOWA—C. A. Dunham Co., manufacturer of heating apparatus, 811 Main street, contemplates building a plant addition here. General offices, 450 East Ohio street, Chicago.

AUGUSTA, KANS.—City recently closed bids

for construction of a new electric light plant here.

FULTON, MO.—Charles F. Haller, Parsons, Kans., and W. H. Ruther, St. Louis, are negotiating with the Fulton chamber of commerce with view of establishing a plant to manufacture aluminum.

KANSAS CITY, MO.—Beacon Airways of America Inc., Board of Trade building, will soon receive bids for a manufacturing plant, 60 x 100 feet, costing about $100,000. Clarence E. Shepard, Huntzinger building, is architect. (Noted June 13.)

POPLAR BLUFF, MO.—City, care B. K. Flannery, mayor, is taking bids for a water purification plant and tank. W. A. Fuller Co., 2916 Shenandoah street, St. Louis, is consulting architect. (Noted May 2.)

Southern States

TEXARKANA, ARK.—St. Louis Southwestern Transportation Co. has awarded contract for three motor coach shop buildings to be built here, to Bailey, Burns & Fitzpatrick, Dallas, Tex. (Noted April 11.)

HATTIESBURG, MISS.—City has plans for construction of waterworks plant. T. S. Allen, McCall building, Memphis, Tenn., is engineer.

OKLAHOMA CITY, OKLA.—Prest-O-Lite Co., 30 East Forty-second street, New York, has plans for the construction of a plant here, 60 x 131 feet, costing about $125,000.

MEMPHIS, TENN.—Pidgeon-Thomas Iron Co., 94 North Second street, which recently had a 2-story warehouse remodeled, has plans for construction of a plant on a 10-acre tract at Iowa and Main streets, in the future. E. L. Harrison, Fidelity Bank building, is architect.

NASHVILLE, TENN.—Graham-Paige Motors Corp., Detroit, will soon establish a plant branch here.

OAKDALE, TENN.—Southern Railway Co., Washington, plans installing power equipment in connection with rebuilding its repair shops here recently damaged by a flood. Estimated cost about $500,000.

DALLAS, TEX.—Bent Concrete Pipe Co. has acquired a 10-acre site in West Dallas and will erect plant costing $100,000.

DALLAS, TEX.—Model Brass Foundry Co., 2309 Hickory street, will build finishing shop, 65 x 90 feet.

DALLAS, TEX.—Seaman Foundry, 2307 Grand avenue, plans installation of additional equipment for manufacture of iron and nonferrous castings.

DALLAS, TEX.—Kennedy Machine & Brass Co. has added a gray iron and nonferrous foundry building, 50 x 100 feet, and plans enlargement of gray iron foundry facilities.

GEORGETOWN, TEX.—City has awarded contract to D. E. Davis for construction of power plant addition. Equipment will include two large type diesel oil burning engines.

HOUSTON, TEX.—Neal Lucey Co., manufacturer of oil field supplies, has started construction of a machine shop and pattern shop at Canal and Greenwood streets. A 3⅛-acre site has been acquired and other buildings may be erected later. Neal Lucey is president and general manager.

PECOS, TEX.—City has completed plans for purchase of a 150-acre tract for an airport. Hangars and repair shop will be erected.

ROCK CREEK, TEX.—United Carbon Co., Charleston, W. Va., which recently completed a carbon black plant here, has started construction of two more to be finished in September.

SAN ANGELO, TEX.—West Texas Utilities Co. will construct an addition, 25 x 195 feet, to boiler room of its Concho station and has ordered Allis-Chalmers turbo-generating equipment of 20,000-horsepower rating.

SAN ANTONIO, TEX.—Aviation Corp., 122 East Forty-second street, New York, plans building a school for flying at Grosvenor field here. Included will be 2-hangars, 110 x 200 feet, and shop building, 80 x 100 feet.

Canada

CARDSTONE, ALTA.—Town council is contemplating installing a new unit in electric light plant here to cost $40,000.

NELSON, B. C.—West Kootenay Power & Light Co. has definitely decided to proceed with the proposed power development program on the Pend Oreille river south of here. The development is expected to be the largest undertaken in British Columbia. (Noted March 21.)

BRANTFORD, ONT.—Ratepayers carried a by-law authorizing expenditure of $400,000 on a mechanical filtration plant for the city. Tenders for construction work will be called at an early date. Norman R. Wilson is waterworks engineer.

OTTAWA, ONT.—It is reported plans are being prepared in connection with proposed hydroelectric power development on the Ottawa river near here, on a site purchased by Ontario hydroelectric power commision, University avenue, Toronto, Ont. Plans call for construction of a dam at Little Chaudiere and development of Chats Falls. C. A. Magrath is chairman of the commission.

TORONTO, ONT.—Consumers Gas Co., 19 Toronto street, has let general contract to Wells & Gray Ltd., Confederation Life building, for erection of a concrete, brick and steel construction boiler and compressor building, to cost $40,000.

TORONTO, ONT.—Extensive airport construction is proposed for this city. Canadian Airways Ltd. proposes to spend $100,000 on construction of an aerodrome. DeHaviland Aircraft Co. has plans for erection of an aerodrome to cost $42,000, and a new plant to cost $100,000. Canadian Colonial Airways Ltd. has started work on erection of an aerodrome here to cost $100,000.

HULL, QUE.—Hull Steel Foundry Co. Ltd., Montcalm street, plans construction of a 4-story foundry, 90 x 300 feet. Electrically operated heat treating ovens will be included. Estimated cost about $200,000.

LACHINE, QUE.—Anglo-Canadian Wire Rope Co., Fairview avenue, has started work on a 1-story factory addition here.

MONTREAL, QUE.—City council is completing arrangements for the erection of a 2-story pumping station on Gouin boulevard, east, to cost $107.000.

Recent Incorporations

CHICAGO—Automatic Canteen Co., Room 1400, 19 South LaSalle street, has been incorporated with $10,000 common and $100,000 preferred stock to manufacture and deal in vending machines, by L. E. Leverone.

CHICAGO—Art Speakers Inc., 1912 South Western Avenue, has been incorporated with $10,000 capital to manufacture and deal in speakers, radios, etc., by Anton Ehrlich.

CHICAGO—Crossland Aviation System Inc., 77 Washington street, has been incorporated with 20,000 shares of no par stock to manufacture and sell airplanes, machines, balloons, etc., by H. C. Pfaff.

CHICAGO—Harbick Lock & Mfg. Co., 6349 North Clark street, has been incorporated with $3000 capital to manufacture and sell motor vehicle locks and locking devices, by Thomas A. Harbick.

HAVANNA, ILL.—Hermann Motors Corp. has been incorporated with $100,000 capital to manufacture and sell aircraft motors, by Adolph F. Hermann.

BOSTON—Modern Die & Machine Co., 615 Albany street, has been incorporated with 100 shares of no par stock to manufacture machinery, tools and implements. Bernard Shivek is president.

BRIGHTON, MASS.—Service Station Equipment Co., 37 Parkman street, has been incorporated with 5000 shares of no par stock to manufacture and deal in pumps, gages, castings, tanks, etc. Laurence P. Manning is president.

QUINCY, MASS.—Edward R. Hall Inc. has been incorporated with $10,000 capital to manufacture all kinds of electrical and chemical apparatus. Edward R. Hall, 20 Muirhead street, Quincy, is president.

WEST SPRINGFIELD, MASS.—Hayden Wire Works Inc. has been incorporated with 200 shares of no par stock to manufacture wire

goods. Charles E. Hayden, 45 Kimberly avenue, Springfield, Mass., is president.

WORCESTER, MASS.—James J. Grouse Inc. has been incorporated with 200 shares of no par stock to manufacture machinery, tools and equipment. Samuel H. Jaffee, 118 Providence street, Worcester, is one of the incorporators.

DETROIT—Western Gear Co., Beard and Chatfield streets, has been incorporated with $100,000 capital to manufacture gears and special tools.

JACKSON, MICH.—Aikins-Chase Co., 111 Damon street, has been incorporated with $25,000 capital to engage in a general machine shop business, by A. D. Aikins.

KALAMAZOO, MICH.—Kalamazoo Special Autobody Co. has been incorporated with $50,000 capital to manufacture and repair bodies and chassis of automobiles.

BELLEVILLE, N. J.—Reliance Steel Products Co. has been incorporated with $125,000 capital by R. I. Morris, Newark, N. J.

HACKENSACK, N. J.—New Jersey Aviation & Finance Corp. has been incorporated with $100,00 preferred and 10,000 shares of common stock to manufacture and finance aircraft plants, by William DeLorenzo, 80 Main street, Hackensack.

NEWARK, N. J.—Vapozone Co. of New Jersey has been incorporated with 1000 shares of common stock to manufacture air purifying machines, by David Z. Jeselsohn, 1060 Broad street, Newark.

PATERSON, N. J.—Clup Excavating Co. has been incorporated with $125,000 capital to engage in the contracting business, by Roemer & Cole, 45 Church street, Paterson.

BROOKLYN, N. Y.—Simon-Davidson Metal Mfg. Corp. has been incorporated with $20,000 capital, by J. Simon, 758 Madison street, Brooklyn.

NEW YORK—Jacoby Sheet Metal Co. has been incorporated with 200 shares of common stock to engage in the sheet metal business, by A. Joseph, 51 Chamber street, New York.

NEW YORK—Die Casting Equipment & Engineering Co. has been incorporated with 100 shares of common stock, by H. W. Stephen, 120 Broadway, New York.

NEW YORK—Master Die & Stamping Corp. has been incorporated with $10,000 capital, by H. G. Robbins, 32 Court street, Brooklyn, N. Y.

NEW YORK—Julius Blum & Co. has been incorporated with $250,000 preferred and 3000 shares of common stock to manufacture and deal in metal products, by Limberg, Reigelman, Hirsch & Hess, 160 Broadway, New York.

CINCINNATI—Rapid Machine Corp. has been incorporated with 1000 shares of no par stock, by Allison Bishopric, Annwood and Dexter avenues.

CLEVELAND—Super-Test Valve & Cock Co. has been incorporated with 100 shares of no par stock, by Charles H. Hubbell, P. O. Box 364, Cleveland.

CLEVELAND—Centri Cast Corp. has been incorporated with $10,000 capital to manufacture and deal in metal products, by A. C. Lorman, Society for Savings building, Cleveland.

KENT, O.—Davey Compressor Co. has been incorporated with 1500 shares of no par stock, by Paul H. Davey.

PHILADELPHIA—Edward Board Inc. has been incorporated with $30,000 capital to manufacture, design and repair machinery, by Edward Board, 1639 North Twelfth street, Philadelphia.

PHILADELPHIA—Connery Clarifying Equipment Co. has been incorporated with $10,000 capital to manufacture and deal in steel tanks, etc., for clarifying solvents, by William M. Connery, 5455 York road, Philadelphia.

MILWAUKEE—Karl Mfg. Co. is being organized in Milwaukee with $150,000 capital to engage in the manufacture of metal safety devices for the gas industry, designed by Ray E. Gest, 899 Fifth street.

CALGARY, ALTA.—Moon Track Co. Ltd. has been incorporated to manufacture and deal in motor, engines, carriages and agricultural implements, with $250,000 capital, by Roy M. Edmanson, Gordon D. MacWilliams and Austin de B. Winter, all of Calgary.

KINGSTON, ONT.—Dundas Stormont & New York Transportation Co. Ltd. has been incorporated to build and operate ships and vessels, with 50,000 shares of no par stock, by Timothy J. Rigney, Jack M. Hickey, Irene M. Martin, all of Kingston.

KINGSTON, ONT.—The Direct Steaming Co. of Canada Ltd. has been incorporated to manufacture and deal in railroad engineering equipment with 30,000 shares of no par stock, by Timothy J. Rigney, Jack M. Hickey and John J. Hyland, all of Kingston.

TORONTO, ONT.—Murray Radiator Co., of Canada Ltd. has been incorporated to manufacture and deal in radiators, with 500 shares of no par stock, by Norman E. Strickland and Harold C. F. Mockridge, 315 Lonsdale road, Toronto, Ont., and others.

New Trade Publications

WELDING—Instructions for welding, soldering and brazing monel metal and pure nickel have been revised and issued as a bulletin by the International Nickel Co., New York.

CONDENSERS—Schutte & Koerting Co., Philadelphia, has added to its loose-leaf catalog a bulletin on its barometric multijet condensers for use with evaporating and other machinery where vacuum is maintained.

WELDING—Fusion Welding Corp., Chicago, has launched a monthly publication called *Fusion News*, to further publicity for its products for welding use and to discuss the general subject of welding.

AUTOMATIC MACHINES—Baird Machine Co., Bridgeport, Conn., manufacturer of forming machinery, presses and tumbling equipment, in a current bulletin announces its service for solving problems of manufacturers needing special designs.

ELECTRIC CONTROLLERS — Time-current control devices of the Electric Controller & Mfg. Co., Cleveland, are discussed in a current bulletin published by that company. Reproduced charts are used to illustrate claims for efficient operation.

ELECTRICAL EQUIPMENT—General Electric Co., Schenectady, N. Y., has issued bulletins on the following equipment: Arc welder, induction motor-generator sets, motor drive for metal-working machinery, industrial heating devices, air compressors for cupola blowing.

FIRE BRICK—Laclede-Christy Clay Products Co., St. Louis, in a current leaflet calls attention to the many factors entering into an effcient fire brick, from nature's efforts in producing the clay to the means employed by man to refine and improve the final product.

STOKERS—Description of a new type high-capacity stoker being built for the Delray station of the Detroit Edison Co., Detroit, is offered in a bulletin by the American Engineering Co., Philadelphia. Illustrations present details of construction and operation.

IRON SHEETS—A wide variety of installations of pure iron sheets for various purposes is shown in a rotogravure sheet issued by the American Rolling Mill Co., Middletown, O. Weather and operating conditions destructive to materials are met by special analysis metal of higher resistance.

LATHES—South Bend Lathe Works, South Bend, Ind., has issued a catalog of its line of lathes of various sizes. Several new models appear in the new catalog. In addition to descriptive catalog material the company has added considerable material of informative character for users of lathes.

RECORDERS—A barometer and vacuum recorder is described in a bulletin by the Uehling Instrument Co., Paterson, N. J. Its purpose is to give the complete picture of condenser performance on one chart. The bulletin discusses the subject and is illustrated by charts and diagrams.

UNIT HEATERS—Application of a recirculating box to its unit heater is illustrated in a bulletin by the Young Radiator Co., Racine, Wis. It is applicable in industrial plants to aid heating efficiency and ventilation. Engineering data and illustrations give much information.

MAGNETIC SEPARATORS—Magnetic Mfg. Co., Milwaukee, has issued a bulletin devoted to magnetic separation of pulverized coal, gypsum, lime, flour, feed and similar materials. Various types of machines for this purpose are illustrated. They are adapted to use where dust prevention is necessary and fire hazards are encountered.

LUBRICATION—Special lubrication problems presented by cement mill machinery are discussed in the current issue of *Lubrication*, a publication of the Texas Co., New York. A list of lubricants for various units of cement mill equipment is given and the matter of lubrication is discussed in detail. Illustrations show the application of oils and greases to various types of bearings.

CORE DRILLS—Determination of the character, order, thickness and extent of materials below the earth's surface by cylindrical cores extracted by core drills is the subject of a bulletin by the Ingersoll-Rand Co., New York. Various sizes of the drills are illustrated and specifications listed. A section is devoted to deep-hole drilling, with diagrams showing action of the drills under difficult conditions.

CRANES, SHOVELS—A book on gasoline, diesel, electric and steam-operated cranes, shovels and draglines has been issued by the Link-Belt Co., Chicago. It gives detailed specifications of machines with from ¾ to 2-yard capacities. Construction details and features of the machines are described. Illustrations show crawler cranes handling steelwork with hook block, sand and gravel with clamshell bucket and scrap with a magnet; locomotive cranes are shown handling coal, sand and other materials; crawler shovels are shown working under difficult conditions.

In Milwaukee-

MILWAUKEE STEEL SERVICE

Mr. Fred O'Dell, Manager, and his Milwaukee *Ward-House* staff, have transformed the word "sell" to the splendid word "serve".

'Phone—Orchard 9060

EDGAR T. WARD'S SONS CO.

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MILWAUKEE WARD-HOUSE—57 Ave. and Burnham St.

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DETROIT, 1300 Fort St., West
NEW YORK, 373 Pearl St.
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The World's Largest Distributors of Fine Steel Products

Pipe and Tube Prices—Plate Extras

Steel Pipe

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½

Lap Weld

2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	60	48½

Lap Weld

2-inch	53	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld

¼-inch	41	24½
⅜ and ½-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½

Lap Weld

2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld

½-inch	42	32½
¾ to 1½-inch	46	35½
2 to 2½-inch	47	37½

To large jobbers these discounts are increased by 1 point and two supplementary discounts of 5 per cent on black, and 1½ points and two supplementary discounts of 5 per cent on galvanized.

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis.

THREADS AND COUPLING

Butt Weld

	Black	Galv.
⅛ and ¼-inch	+11	+36
⅜-inch	23	5
½-inch	28	11
¾ and 1-inch	31	15
1¼ and 2-inch	35	18

Lap Weld

1¼ and 1½-inch	Upon application	
2-inch	23	9
2½ to 3½-inch	28	12
4 to 6-inch	30	17
7 and 8-inch	29	16
9 to 12-inch	26	11

REAMED AND DRIFTED

2-inch to 6-inch—Two points less than above

EXTRA STRONG, PLAIN ENDS

⅛ and ¼-inch	+13	+48
⅜-inch	23	7
½-inch	28	12
¾ to 2-inch	34	18

Lap Weld

2-inch	29	13
2½ to 4-inch	34	20
4½ to 6-inch	33	19
7 and 8-inch	31	17
9 to 12-inch	21	8

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½-inch	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	.....

Jobbers obtain additional preferential discounts of 1, 5 and 2½ on black and galvanized wrought iron pipe.

On extra or double extra strong pipe fitted with threads and couplings basing discount lowered 5 points from plain end price. Fitted with threads only, basing discount lowered 3 points for random lengths.

Boiler Tubes

Pittsburgh carload discounts

STEEL (Lap Weld)

2 and 2¼-inch	40 off
2½ and 2¾-inch	48 off
3-inch	54 off
3¼ to 3¾-inch	56 off
4-inch	59 off
4½ to 6-inch	48 off

Subject to two 5 per cent discounts on full carload shipments. On less than 10,000 pounds, base discount reduced 6 points and one 5 per cent allowed. On 10,000 pounds to carload, base discount reduced 4 points and two 5 per cents allowed.

CHARCOAL IRON

1½-inch	1 off
1¾-inch	8 off
2 and 2¼-inch	13 off
2½ and 2¾-inch	16 off
3-inch	17 off
3¼ to 3½-inch	18 off
4-inch	20 off
4½-inch	21 off

Subject to 10 per cent discount on full carload lots. On less than 10,000 pounds, base discount reduced 2 points and no preferential allowed. On 10,000 pounds to carload, 5 per cent preferential allowed.

SEAMLESS COLD DRAWN

1-inch	63 off
1¼ and 1½-inch	55 off
1¾-inch	39 off
2 and 2¼-inch	34 off
2½ and 2¾-inch	42 off
3-inch	48 off
3¼ and 3½-inch	50 off
4-inch	53 off
4½, 5 and 6-inch	42 off

SEAMLESS HOT ROLLED

1¾-inch	39 off
2 and 2¼-inch	40 off
2½ and 2¾-inch	48 off
3-inch	54 off
3½ and 3½-inch	56 off
4-inch	59 off
4½, 5 and 6-inch	48 off

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed.

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.30 per cent.....50 to 55 off
Carbon 0.30 to 0.40 per cent.....45 to 50 off

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Net prices per foot f.o.b. Pittsburgh

Outside diameter	Gage	Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅝-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for lengths over 24 feet.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, date Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

All Plates Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weight.

Over 100 to and including 110 inches	.05c
Over 110 to and including 115 inches	.10c
Over 115 to and including 120 inches	.15c
Over 120 to and including 125 inches	.25c
Over 125 to and including 128 inches	.50c

Plates less than ¼-inch or lighter than 11 pounds per square foot.

Over 72 to and including 84 inches	.10c
Over 84 to and including 96 inches	.20c
Over 96 to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier.

GAGE

Plates Not Exceeding 72 Inches Wide

Plates less than ¼-inch gage, to and including $\frac{7}{16}$-inch; or lighter than 10.2 pounds per square foot, to and including 7.65 pounds square foot..... .20c

Plates Over 72 Inches Wide

Plates less than ¼-inch gage, to and including $\frac{7}{16}$-inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds square foot.... .20c

Plates ordered 7.65 pounds square foot .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c

Hull materials subject to U. S. Navy Dept. specifications for medium or soft steel ..... .10c

High tensile hull steel subject to U. S. navy department or equivalent specifications 1.00c

Boiler steel subject to U. S. navy department specifications, classes A-B 1.50c

Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.

Floor Plates

Checkered plates 1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection .....No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH OR DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet	No extra
Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.10c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts. (Including straight taper plates)

Additional extra ..... .10c

Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared with re-entrant angles)

Additional extra ..... .20c